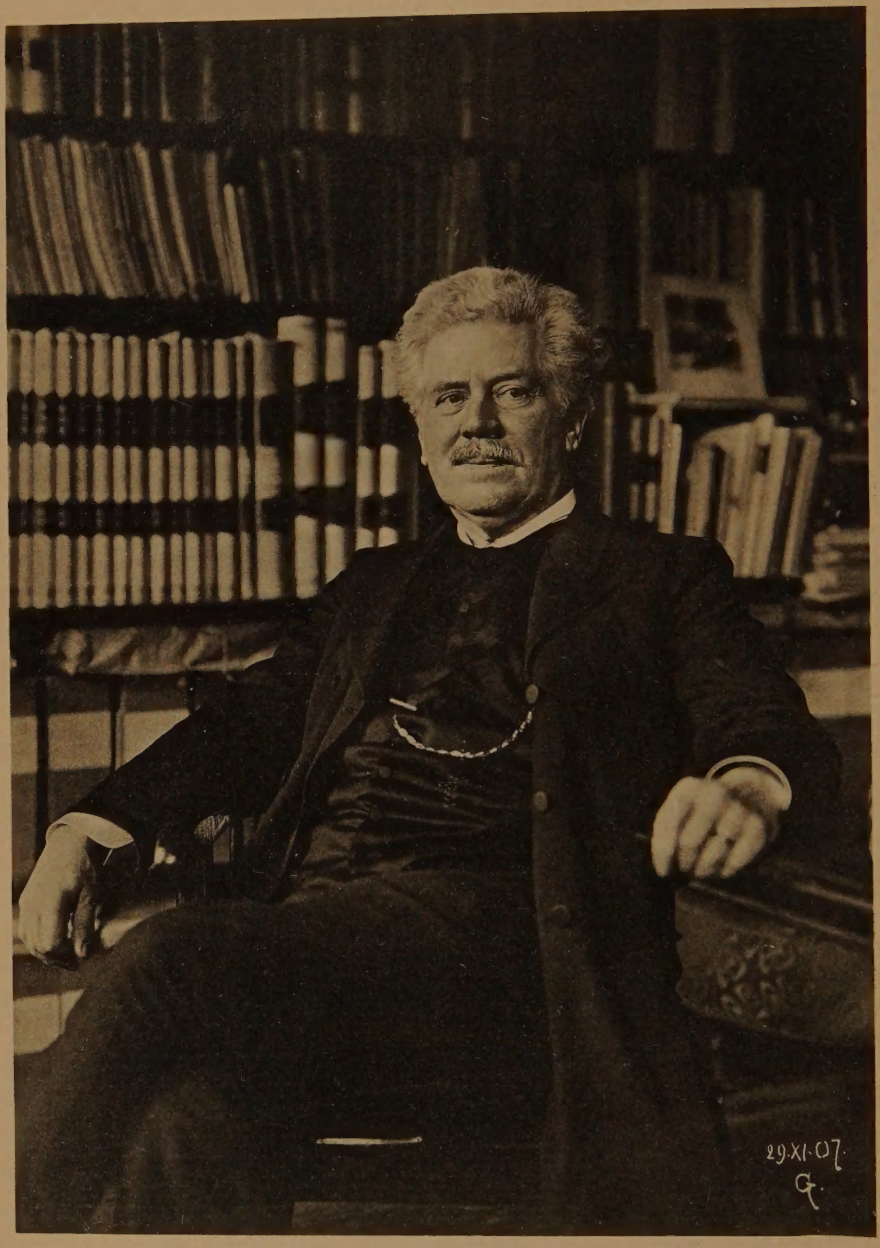
School of Theology at Claremont
1001 1419496

Theology Library

SCHOOL OF THEOLOGY
AT CLAREMONT
California



A. T. Gellerstedt photo. Lagrelius et Westphal phototypice repr.

Gustaf Retzius

THE SWEDENBORG ARCHIVES

PART I.

BX
8709
S7
v.1

A SERIES OF REPORTS

CONCERNING

INVESTIGATIONS AND PROCEEDINGS IN SWEDEN

FROM

1902 TO 1912

BY

ALFRED H. STROH, M. A.

STOCKHOLM
P. A. NORSTEDT & SÖNER
1912

STOCKHOLM
KUNGL. BOKTRYCKERIET. P. A. NORSTEDT & SÖNER
1912
[122793]

TO

PROFESSOR DR. GUSTAF RETZIUS

ON HIS SEVENTIETH BIRTHDAY

OCTOBER SEVENTEENTH, NINETEEN HUNDRED
AND TWELVE

»THE SWEDENBORG ARCHIVES» ARE DEDICATED
IN ADMIRATION AND FRIENDSHIP

BY

THE AUTHOR

PREFACE.

From the *Reports concerning Investigations and Proceedings in Sweden from 1902 to 1912* the student of Swedenborgiana will be able to obtain an introductory and general idea of the material which it is proposed to describe in the present series, *The Swedenborg Archives*. In dedicating to Professor Dr. GUSTAF RETZIUS this series I desire, on the part of all students of SWEDENBORG, to congratulate him on the occasion of his seventieth birthday, and at the same time to express to him my heartfelt thanks for all that he has done during the past decade to foster and support the investigation and publication of SWEDENBORG's works and documents in Sweden. Without the energetic and powerful support of Professor GUSTAF RETZIUS on many occasions the »Swedenborg Revival» which has developed in Europe and America during the past ten years to an unexpected extent would hardly have been possible.

In the *Reports* on the following pages the progress of investigations concerning Swedenborgiana and the course of proceedings in Sweden and other countries to honor the memory of EMANUEL SWEDENBORG may be observed from year to year since their first inception in 1902. Although there is some repetition in these *Reports* I have decided to print them as they were first written and published, since they are the only consecutive account in existence of the investigations and proceedings referred to and are not based upon recol-

lections written down long after the occurrence of the events described, but are immediate sketches made on the spot.

The various departments of the work in Sweden as they are usually referred to in the *Reports*, namely, »The Phototyping of Swedenborg's Theological Works», »The Printing of Swedenborg's Scientific Works», »The Investigation of Swedenborgiana», are at precent the only undertakings in hand. The proceedings in honor of SWEDENBORG which occurred from 1908 to 1910, and to which a Part of the *Archives* will be devoted, may however be followed in 1916 by the erection of a bronze statue of SWEDENBORG which I have proposed shall be placed in the Adolf Fredrik Square, on Hornsgatan, Stockholm, a stonesthrow from the site of SWEDENBORG's residence during the later years of his life. This proposal has been very favorably received in Sweden and abroad.

Stockholm, October, 1912.

Alfred H. Stroh.

CONTENTS.

Page

Frontispiece. Portrait of Professor Dr. Gustaf Retzius. From a photograph by A. T. Gellerstedt taken in 1907.

Dedication . . . . . III.

Preface . . . . . V.

Two letters by Mr. Alfred H. Stroh and by Professor Dr. Gustaf Retzius, President of the Swedenborg Committee of the Royal Swedish Academy of Sciences, on the appointment of the Committee. (Reprinted from *The New Philosophy*, April, 1903) . 1.

Report of the Work in Sweden. Annual Report for 1902—1903. (Reprinted from *The New Philosophy*, July, 1903) . . . . . 5.

Report on the Reproduction of Swedenborg's Manuscripts by the Swedenborg Scientific Association and the Royal Swedish Academy of Sciences. Annual Report for 1903—1904. (Reprinted from *The New Philosophy*, July, 1904) . . . . . 8.

Report on the Printing of Swedenborg's Scientific Works in Sweden and America. Annual Report for 1904—1905. (Reprinted from *The New Philosophy*, July, 1905) . . . . . 10.

Report of the Printing of Swedenborg's Scientific Works in Sweden and America. Annual Report for 1905—1906. (Reprinted from *The New Philosophy*, July, 1906) . . . . . 13.

The Publication and Investigation of Swedenborg's Works at Stockholm, December, 1906. Reprinted from *The New Philosophy*, January, 1907) . . . . . 15.

Report of the Work in Sweden, April, 1907. Reprinted from the *Journal* of the General Convention, Boston, 1907) . . . 21.

Report on the Copying and Publication of Swedenborg's Scientific Works. Annual Report for 1906—1907. (Reprinted from *The New Philosophy*, July, 1907) . . . . . 24.

Page.

Report of the Work in Sweden, December, 1907. (Reprinted from *The New Philosophy*, January, 1908) . . . . . 26.

Report of the Work in Sweden, February, 1908. (Reprinted from *The New Philosophy*, April, 1908) . . . . . 29.

Report of Progress in the Investigation and Publication of Swedenborgiana. Annual Report for 1907—1908. (Reprinted from *The New Philosophy*, July, 1908) . . . . . 34.

Report of the Work in Sweden, October, 1908. (Reprinted from *The New Philosophy*, January, 1909) . . . . . 40.

A Report of the Proceedings in Sweden. Annual Report for 1908—1909. (Reprinted from *The New Philosophy*, July, 1909) 45.

The Work in Sweden. Annual Report for 1909—1910. (Reprinted from *The New Philosophy*, July, 1910) . . . . . 51.

Annual Report of Work on Swedenborgiana i Sweden, 1910—1911. (Reprinted from the *Report* of the Swedenborg Society, London, 1911) . . . . . 55.

How to solve the Problem of a Complete Edition of Swedenborg's Works. (Reprinted from *Morning Light*, March 30th, 1912) . . . . . 62.

Annual Report of the Work on Swedenborgiana in Sweden, 1911—1912 . . . . . 65.

A Report and Communication to the Swedenborg Scientific Association. (Reprinted from *The New Philosophy*, July, 1912) . 69.

Two Letters by Mr. Alfred H. Stroh and by Professor Dr. Gustaf Retzius, President of the Swedenborg Committee of the Royal Swedish Academy of Sciences, on the Appointment of the Committee.

(Reprinted from *The New Philosophy*, April, 1903.)

European interest in Swedenborg's Scientific Writings: — The following letters will interest those who have followed the movement for publishing Swedenborg's Scientific MSS. now on foot in Sweden. The second was received through the President of the Association.

EDITOR OF THE NEW PHILOSOPHY:

In the January number of *The New Philosophy*, page 25, I notice that there is an account of the recent action of the Swedish Royal Academy of Sciences. The following historical sketch may be of interest to the readers of *The New Philosophy* in connection with the development of interest in Swedenborg's scientific works in past and present times.

As long ago as 1845 Professor Anders Retzius, the great anatomist and founder of modern anthropology, wrote most appreciatively of Swedenborg's scientific genius and compared him to Aristotle. His son, Professor Gustaf Retzius, among others, supplied the historian Fryxell with statements respecting Swedenborg. Then came Dr. R. L. Tafel's great work in calling attention to Swedenborg's valuable contributions respecting the brain and nervous system, by a publication of a translation of some of the manuscripts, together with masterly comparisons of Swedenborg's results with those of modern scientists, showing that very important anticipations regarding function and structure had been made by Swedenborg. In 1883 Professor C. Lovén described the first volume of Dr. Tafel's edition of the *Brain* at a meeting of the Academy of Sciences. After this, among other European notices of Swedenborg's scientific works, may be mentioned a long contribution to the Proceedings of the Academy of Sciences for 1889 on *Swedenborg as a Mathematician*, by Gustaf Enestrom. In 1892 the geologist A. G. Nathorst

in his work on the *Geology of Sweden* called attention to the notable work Swedenborg did in the field of geology. In 1900 the meteorologist N. Ekholm referred most favorably to Swedenborg's *Principia*, particularly to the comparison of the forces obtaining in the primeval "chaos" to those of the magnet. Within the last few months a great text-book on cosmology and physics has been published by Dr. Svante Arrhenius, in which Swedenborg's position in the history of cosmogony is recognized. In recent times Dr. Max Neuburger, of Vienna, has again drawn the attention of scientists to Swedenborg's remarkable anticipations of later results in the physiology of the brain. In the early months of 1902 Dr. Neuburger, through the Swedish legation at Vienna, inspired a document of enquiry respecting the unpublished manuscripts of Swedenborg preserved in Stockholm. The document was received by Professor Gustaf Retzius and the manuscripts examined. However, the handwriting was found to be very difficult and nothing further was done. Some time after my arrival in Sweden I met Professor Retzius and he asked me to help in an investigation of the manuscripts. Interest in Swedenborg's scientific works increased and the idea came to Professor Retzius that a committee of investigation be appointed and on December 11th he laid a motion to that effect before a meeting of the Academy of Sciences. The motion was passed and the committee appointed. I had the great pleasure of being present on this memorable occasion, so interesting to the student of Swedenborg's science and philosophy. Since the meeting the committee has met and organized.

ALFRED H. STROH.

STOCKHOLM, March 12, 1903.

DEAR MR. STROH,

You have asked me, how I conceived the idea of proposing to the Swedish Academy of Sciences to appoint a committee for revising the manuscripts of Em. Swedenborg that are kept in the Library of the Academy.

I will with great pleasure tell you the history of this proposal.

Many years ago, in the beginning of the 1870-decade, the renowned Historian Professor Anders Fryxell, the Author of "Berättelser ur Svenska historien," asked my opinion about the value of the anatomical works of Em. Swedenborg. I then tried to study the edited anatomical works as far as they were to be had in the Library of the Caroline Institute (The Medical School of Stockholm), and as

much as my time could afford. I wrote to Prof. Fryxell a short treatise on the subject. I had found that Swedenborg was a most learned man in the anatomical literature as well as in other branches. I had, however, then not found those marvellous passages where Swedenborg pronounces new ideas on the localization of the different centra in the brain, nor the exposition of the cerebro-spinal fluid, etc.

In the year 1882 the highly interesting work "The Brain considered anatomically," etc., edited by R. L. Tafel, was published. Dr. Christian Lovén, at that time Professor of Physiology at the Caroline Institute, referred Dr. Tafel's work before our Swedish Academy of Sciences and pointed out, that Dr. Tafel had shown that several of the later great discoveries in the science of the brain and the nervous system were either made or more or less foreseen by Swedenborg, for instance the localization of the psychic faculties in the cortex of the brain and especially the localization of the motor centra, which in our own time were again discovered by P. Broca and by G. Fritsch and Hitzig (in 1870), the existence, importance and distribution of the cerebro-spinal fluid in the brain, the spinal marrow and the peripheric nerves, which fluid, after Swedenborg's time, was described by Cotugno, Magendie, Bogros, A. Key and myself.

Since that period I did not have the opportunity to occupy myself with Swedenborg's works, until in last spring (1902), when I received from the Swedish Ministry of Foreign Affairs in Stockholm a request, which was based upon a paper from our Legation in Vienna. Docent Dr. M. Neuburger had asked the Legation to transmit a printed treatise by him at the meeting of the naturalists in Hamburg in 1901 "Swedenborg's Beziehungen zur Gehirnphysiologie."

The Swedish Ministry of Foreign Affairs remitted the papers of the Legation and of Dr. Neuburger to me. In the former paper the Legation mentions: "In the letter, by which Dr. Neuburger transmitted his paper, he writes amongst other the following:

"Da selbst in den gelehrten kreisen Deutschlands über Swedenborg's wunderbare Vorahnung der neuesten Errungenschaften der Gehirnphysiologie so gut wie nichts bekannt war, benutzte ich die Gelegenheit des Naturforschertags um Swedenborg als Vorläufer Gall's und Hitzig's zu feieren. Es ist sehr zu bedauen, dass eine in Stockholm liegende, umfangreiche Handschrift Swedenborg's über das Gehirn noch nicht veröffentlicht worden ist."

In consequence of this remittance I tried, in the Library of the Academy of Sciences, to make studies in Swedenborg's manuscripts

of anatomical contents. But I soon found, that it would take me more time than I could devote to this work. The manuscripts are voluminous and in many places very difficult to read. The Latin proved also often difficult to understand. I therefore soon found that I must give up this work.

In the autumn (last year) I heard that an American investigator of Swedenborg's works, Mr. Alfred Stroh, had arrived in Stockholm. It was then that I tried to make your acquaintance, Mr. Stroh. I soon met with you and found that you were able to read and to understand quite well the manuscripts of Swedenborg, and you were kind enough to promise to help me with the deciphering.

This was the reason why I again took up the problem.

I then proposed to the Academy of Sciences to name a committee of five of her members for examining the scientific manuscripts of Swedenborg, not only the anatomical, but all of them, the physical, the geological, the paleontological, the metallurgical, etc.

I told the Academy that Dr. Neuburger had asked through the Legation of Vienna for an examination of a manuscript concerning the Brain, but I thought it to be best to try to examine all the others, if there might be some unedited of a high value. I also informed the Academy that we at present had the good opportunity of having in our country Mr. Alfred Stroh, whom I had, with the permission of the Secretary, invited to the same session of the Academy. Thanks to you it might be possible for us to get the work executed.

The Academy then nominated a committee of five members, Professor Christian Lovén, Professor Alfred Nathorst, Professor Svante Arrhenius, Professor S. E. Henschen and myself. We began our work, as you know, with the decision to divide the researches in accordance with our special sciences and by considering which of the manuscripts might be the most important for copying. As you kindly informed us, that in America there might exist copies of one or two of the most voluminous and most important manuscripts, we charged you to make inquiries about them, and we suspended the decision of the copying, until you could give us information on this question. We also ought to get means for the expenses necessary for the copying. There are happily persons here who can do that work, but it is necessary to get the transcriptions revised, and you have been so kind as to promise us to inspect and to revise them. We are therefore indebted to you, Mr. Stroh, for your great interest in this problem, which for the history of Science is of great importance.

This is the story of the beginning of our Swedenborg investigations. I have here given the dates just as they have succeeded each other. I take this occasion to thank you for your promise of helping us with the studying and deciphering of the manuscripts and the revision of the transcriptions.

Yours very sincerely,

GUSTAF RETZIUS,

President of the Swedenborg Committee of the Academy of Sciences.

Report of the Work in Sweden. Annual Report for 1902-1903.

(Reprinted from *The New Philosophy*, July, 1903.)

REV. E. J. E. SCHRECK, SECRETARY OF THE SWEDENBORG SCIENTIFIC ASSOCIATION: —

In a communication to the last meeting of the Association I recorded the transcription of a number of Swedenborg's unprinted manuscripts. During the meeting the manuscripts were offered to the Association and the arrangement made that they be transferred to the Association after there had been opportunity to revise them. Since the last meeting I have had opportunity to revise the transcriptions by comparing them with the original manuscripts preserved in the Library of the Royal Swedish Academy of Sciences, and it has been my intention to transmit them to the keeper of the Association's archives. But the Academy of Sciences has recently become much interested in the matter of printing a selected number of Swedenborg's manuscripts and works out of print, to be issued in a series with some such general title as *Emanuelis Swedenborgii Opera Quædam Obsoleta et partim Inedita.* In view of this I would ask the permission of the Association to retain the transcriptions in my possession somewhat longer in order that the Swedenborg Committee of the Academy of Sciences may have the use of them, for the question of printing one of them has arisen.

I take this opportunity of offering to the Association the transcription of Swedenborg's paper, *De Causis Rerum*, which was made directly from the original manuscript preserved in the Diocesan Library at Linköping. This paper was translated into English and appeared in "The New Philosophy" for January, together with the

first instalment of an English translation of one of the manuscripts, the transcription of which was reported last year, namely, the "Summary of the Principia."

Having been appointed by the Executive Committee of the Association to edit and see through the press the edition of the "*Worship and Love of God*," the publication of which was proposed and undertaken by the Association, I have been occupied with it during the past year. A revision of the First and Second Parts has been made by me, and hundreds of changes entered in the old translation. The Third Part has also been translated, and Swedenborg's marginal notes entered in their proper places in the First Part. Progress has been made and printing begun. I wish to record my indebtedness to Dr. Frank Sewall for his valuable improvements in the final revision of the First Part, especially in the direction of enhancing the beauty and gracefulness of the English; to the Rev. George G. Starkey and the Rev. William B. Caldwell for suggested improvements in the early portion of the First Part, and to Mr. James Speirs, of London, for the use of his copy of the original Latin edition of the First and Second Parts, containing a transcription of Swedenborg's marginal notes to the First Part, entered with much care by the former librarian of the Royal Swedish Academy of Sciences, Dr. J. A. Ahlstrand.

Much progress has been made in the copying for the Association of certain of the unphotographed scientific manuscripts of Swedenborg, which are preserved in the Library of the Academy of Sciences at Stockholm. Shortly after my arrival in Stockholm the copy of Codex 83, which had been collated and sent to America, was returned for further collation. Inclusive of the copy and of those mentioned in the Report of the Committee on the Publication of Swedenborg's Scientific Manuscripts to the last meeting of the Association as having heen completed, the following codices or parts of codices have been copied under my superintendence from the original manuscripts, namely, Codices 36, 37, 81, 82, 83, 84, 85, 86, 88 and 99. Most of this copy has also been collated, and some time ago the collated copies of codices 82, 83 and 84 were mailed to the former Treasurer of the Association, Mr. C. Hj. Asplundh, under whose general management the work which I am superintending was begun and nearly completed before his sudden death. Since then I have been corresponding in regard to the work with his successor, the Rev. C. E. Doering.

In this connection a few words may be said in regard to the copying which is being carried on for the use of the Swedenborg

Committee of the Royal Swedish Academy of Sciences. A large number of the manuscripts of Swedenborg which are contained in the volume of *Collectanea Physico-Mathematica, XL Bibliothecæ Lincopiensis* have been copied; the copying of Swedenborg's indices to the Second Part of the *Œconomia Regni Animalis* and to the First and Second Parts of the *Regnum Animale*, which are contained in Codex 38, has been completed, as also Codex 57, and much headway has also been made in the copying of Codex 65.

The action of the Academy of Sciences, in appointing a special committee to investigate the scientific works of Swedenborg and the decision to print a series of manuscripts and works out of print, referred to above, have been reported to *The New Philosophy*. (See the issue for April.) It may now be added that in addition to the "Lesser Principia" it has now been decided to begin at once with the printing of another volume of the series which is planned to contain Swedenborg's contributions to geology together with the "Miscellaneous Observations" and "Principles of Chemistry." The copy for both volumes is in the hands of the printer, and I have lately been busy preparing it and afterwards correcting the proof-sheets.

For more than half a year I have been at work on a "Memoir respecting Emanuel Swedenborg as a Scientist and Natural Philosopher", which will be submitted to the consideration of the Royal Swedish Academy of Sciences.[1] I have also planned and begun the elaboration of a "*General Index to Swedenborg's Scientific Works*," [1] with something of the scope of Beyer's *Index Initialis*, a work which is still of value to the student, and would be still more so if revised and brought up to date. For years I have felt the need of an index to Swedenborg's scientific works, especially when making a comparative study of any one subject as treated by him in various places and at various times. I now propose to make use of the indices which Swedenborg himself made and by further indexing the most important and striking passages in the scientifics works to produce a guide for the student which will be in relation to the scientific works as a whole what the brain and nerves are to the body. Any suggestions from anyone interested in the work will be most gladly received.

Respectfully submitted,
ALFRED H. STROH.

77 Rådmansgatan, Stockholm, June 1, 1903.

[1] The Memoir was abandoned, but in place of it there followed in 1908 a series on *Emanuel Swedenborg as a Scientist*. — A. H. S.

Report on the Reproduction of Swedenborg's Manuscripts by the Swedenborg Scientific Association and the Royal Swedish Academy of Sciences. Annual Report for 1903-1904.

(Reprinted from *The New Philosophy*, July, 1904.)

Rev. E. J. E. Schreck, Secretary of the Swedenborg Scientific Association: —

The present report is in continuation of the one sent last year. (See *The New Philosophy*, July, 1903, pp. 97-99.) A reply [1] to the last report was received from the committee appointed by the Association, and as a result, the manuscripts mentioned in the early portion of the report have been retained for use by the Swedenborg Committee of the Royal Swedish Academy of Sciences.

Progress has been made in the editing of the new edition of the *Worship and Love of God*. Part I. has been still further revised, a number of valuable suggestions by Dr. Frank Sewall being incorporated.

The copying of Swedenborg's manuscripts by the Association has not been completed. Up to the present time the following Codices or parts of Codices have been copied, 36, 37, 81, 82, 83, 84, 85, 86, 88, 99. Only a portion of the unreproduced material in Codex 88 has been copied. Codices 81, 82, 83 and 84 were finally collated by the writer, and the copies forwarded to America before leaving Sweden last August. Numerous critical and explanatory notes were made in red ink in the copies to facilitate the editing in America. The copies not sent to America were, with the consent of the Librarian of the Royal Swedish Academy of Sciences, carefully stored in the Library of the Academy. They have been partially collated, and the writer hopes to continue the work this summer.

In addition to the above-mentioned copies of the manuscripts a number of manuscripts and documents were copied by or for the writer; translations of some of these copies will be offered for publication to *The New Philosophy*, and the original copies will be placed in the Archives of the Association.

As reported last year, a great deal of copying of Swedenborg's manuscripts was undertaken by the Swedenborg Committee of the

---

[1] The reply was verbal. — A. H. S.

Royal Swedish Academy of Sciences. This work has been continued, and progress has also been made with the printing of the two volumes on which work was begun.

In volume I. there have been printed: 1. *Om Watnens Högd*, etc., the work on the *Height of Water*, etc., published by Swedenborg in two editions in 1719. The second edition, which differs somewhat from the first, has been reprinted. See the *Documents*,[1] Chronological Account, No. 19.

2. *Anmärckninger om Musslor, Sneckor*, etc. (*Remarks on Mussels, Snails*, etc.). See *Document* 311, No. 5. These *Remarks* have hitherto been accessible in the photolithograph only.

3. *Om Wennerns Fallande och Stigande*, etc. (*Concerning the Rise and Fall of Lake Wenner.*). See *Documents*, Chronological Account, No. 25. This treatise has hitherto been accessible in the photolithograph only.

4. *Excerpta Tria ex Actis Literariis Sveciæ ex Annis* 1720-1721. (*Three Extracts from the Acta Literaria Sveciæ of the years* 1720-1721.) The first two extracts are reviews of Nos. 1 and 3, the third extract is Swedenborg's Letter to Jacobus a Melle of Lübeck. See *Documents*, Chronological Account, No. 27.

5. *Miscellanea Observata*, etc.; the *Miscellaneous Observations*, etc., the work published by Swedenborg at Leipsic in 1722. Of this work Parts I. to III. are in print, and the printing of Part IV., which is extremely rare, will follow. See *Documents*, Chronological Account, No. 33.

Altogether over 144 pages of Vol. I. have been printed. The volume is designed to contain Swedenborg's contributions to Geology.

Of volume II., 80 pages are in type, containing more than one-third of the work commonly known as the *Lesser Principia*. See *Documents*, Chronological Account, No. 26. The original basis of the printer's copy of this important work is the copy made from the photolithographed reproduction by Messrs. Goerwitz, Vinet and Brown. (See *The New Philosophy*, July, 1902, pp. 128-129.) This copy was reproduced in the early half of 1902, three type-written copies being made. One of these type-written copies was presented to the writer by Mr. C. Hj. Asplundh with the understanding that after it had been corrected in Stockholm by comparison with the original manuscript, a revised copy of one of the other type-written reproductions should be made. In Stockholm, when the Swedenborg

[1] The work referred to is entitled: *Documents concerning Swedenborg*, by Dr. R. L. Tafel, London, 1875-77. — A. H. S.

Committee of the Royal Swedish Academy of Sciences was organized, the writer, acting as the representative of the Swedenborg Scientific Association, agreed to turn over the type-written copy in his possession to the Swedenborg Committee, provided the work would be printed. A decision was soon made and the printing begun. The type-written copy had been partly edited in America, but was finally edited in Stockholm after the decision to print had been made. This copy is being carefully preserved and will be placed in the Archives of the Association when the printing has been completed.

The corrected proof-sheets of the two volumes have been regularly forwarded to America by the writer's assistant in Stockholm, Fil. Kand. Hr. Otto Holm, and, after final revision and the preparation of critical notes by the writer, have been returned to Stockholm for printing. The Rev. Alfred Acton has given valuable aid in the final revision of the proof-sheets of the *Lesser Principia.*

The "Memoir respecting Emanuel Swedenborg as a Scientist and Natural Philosopher," mentioned in last year's report, is in the hands of the printer.

The writer takes this oportunity to make acknowledgment of the valuable help given to him as the representative of the Swedenborg Scientific Association by the officials and members of the Royal Swedish Academy of Sciences, and also by the librarians in Stockholm, Upsala, Linköping and Lund.

Respectfully submitted,
ALFRED H. STROH.

Bryn Athyn, Pa., May 11, 1904.

Report on the Printing of Swedenborg's Scientific Works in Sweden and America. Annual Report for 1904-1905.

(Reprinted from *The New Philosophy*, July, 1905.)

REV. E. J. E. SCHRECK, SECRETARY OF THE SWEDENBORG SCIENTIFIC ASSOCIATION: —

The present report is in continuation of the one sent last year. (See *The New Philosophy*, July, 1904, pp. 102-104.)

There is nothing to report this year concerning the copying of Swedenborg's scientific manuscripts. Up to the present time no

further copying has been done, although considerable progress has been made with the printing. The shorter copies of manuscripts which were made by or for the writer, and which are the property of the Association, have, in agreement with the permission of the Association, been retained for use by the Swedenborg Committee of the Royal Swedish Academy of Sciences. That body has continued the printing of the two volumes mentioned in last year's report, as follows:

Of Volume I., Part IV. of the *Miscellanea Observata* has been printed and the *Expositio Legis Hydrostaticæ* is in type, making altogether 179 pages of Volume I. Of Volume II. the *Lesser Principia* has been printed, while the *Argumenta Quædam in Principia Rerum Naturalium* and the *Summarium Principiorum Rerum Naturalium* are in type, making altogether 262 pages of Volume II. *The Expositio Legis Hydrostaticæ* (*An Exposition of a Hydrostatic Law*) has hitherto been accessible in the *Acta Literaria Sueciæ* for 1722, and in an English translation contained in the Appendix to the *Miscellaneous Observations.* (See the *Documents*, Chronological Account, No. 35.) The *Argumenta Quædam in Principia Rerum Naturalium* (*Some Arguments for the Principia*) has hitherto been accessible in the photolithograph and in an English translation by the Rev. Reginald W. Brown, published in Volume III. of *The New Philosophy*. The new title given above has been supplied by the editor, for Swedenborg did not give the *Arguments* a title. (See the *Documents*, Chronological Account, No. 40.) The *Summarium Principiorum Rerum Naturalium* (*Summary of the Principia*) has hitherto been accessible in the photolithograph and in an English translation published by the Association last year. The arrangements for editing and printing have been the same as before.

According to the plans of the Committee, the scientific correspondence of Swedenborg and other materials are to be included in these volumes, and therefore efforts have been made to bring to light unknown letters of Swedenborg. With this end in view notices were inserted in the *Publishers' Weekly* and the *Library Journal.* Anyone knowing of letters by or to Swedenborg, or of any manuscript materials by him, is invited to communicate with the Secretary of the Association or with the undersigned.

Through the good offices and energetic efforts of Mr. Horace P. Chandler the printing of the new edition of the *Worship and Love of God* has been undertaken by the Rotch Trustees and the Massachusetts New Church Union. 115 pages of corrected page-proofs have been finished. Dr. Frank Sewall has continued to revise the

materials, and has completed the Second Part and the Fragment of the Third Part. As before, when the material has been finally revised by the writer, the copy is sent to the printer. A number of valuable suggestions have been received from Dr. E. A. Whiston, through whose hands all proofs have passed.

During the past year the Executive Committee approved of a plan to begin the printing of a volume of *Scientific and Philosophical Treatises* by Emanuel Swedenborg; the volume having been planned to consist of two Parts and to be published in fascicles. The First Part has been planned to contain materials on Chemistry, Geology, Physics and Cosmology, the Second Part materials on Anatomy, Physiology, Psychology and Philosophy. The first fascicle of Part II. is in print and fills sixty pages. The treatises contained are:

1. *On the Infinite, the Indefinite and the Finite.*
2. *On the mechanism of the soul and the body.*
3. *Observations on the human body.*
4. *The way to a knowledge of the soul.*
5. *Characteristic and mathematical philosophy of universals.*
6. *Corpuscular philosophy in brief.*

At the beginning of each treatise a foot-note has been added giving the most important historical and bibliographical references. Nos. 1 and 2 have hitherto been inaccessible in English; after some revision Nos. 3, 5 and 6 have been reprinted from *The New Philosophy*, and No. 4 from the first edition of the *Posthumous Tracts*.

The copy of the first fascicle of Part I. has been sent to the printer and will contain:

1. *On the causes of things.*
2. *On the nature of fire and colors.*
3. *Remarks on mussels, snails, etc., in limestone; and also on slate.*
4. *On the height of water and the strong tides in the primeval world.*
5. *On the falling and rising of Lake Venner.*
6. *Swedenborg's Letter to Jacob a Melle.*

No. 4 has hitherto been inaccessible in English; Nos. 1, 2, 3, and 5 have been reprinted from *The New Philosophy*, and No. 6, after some revision, from the Appendix to the *Miscellaneous Observations*.

The publication of the "Memoir respecting Emanuel Swedenborg as a Scientist and Natural Philosopher," which is in the hands of

the printer, has been delayed, and some recent materials will be added.

Respectfully submitted,

ALFRED H. STROH.

Bryn Athyn, Pa., May 30th, 1905.

Report of the Printing of Swedenborg's Scientific Works in Sweden and America. Annual Report för 1905-1906.

(Reprinted from *The New Philosophy*, July, 1906.)

TO THE SWEDENBORG SCIENTIFIC ASSOCIATION:

The present report is in continuation of the one sent last year. (See *The New Philosophy*, July, 1905, pp. 256-257.)

During the past year some additional copying of the scientific manuscripts has been done by Miss Greta Ekelöf, and while visiting Stockholm last summer I continued the work of comparing with the original manuscripts the copies already made. In a future report I shall present to the Association a complete table, showing exactly what materials have been copied for the Association and for the Swedenborg Committee of the Royal Swedish Academy of Sciences.

Last summer the following plan of publication of the scientific works now being printed in Stockholm was made. According to it there will be seven large volumes, which will contain:

I. Small geological treatises, the *Miscellaneous Observations*, and the correspondence of Swedenborg, Eric Benzelius, Christopher Polhem, and others.

II. The *Prodromus*, or work on *Chemistry*, the *Dædalus Hyperboreus*, and various small treatises.

III. The *Lesser Principia*, *Summary of the Principia*, *Arguments for the Principia*, and Part III. of the *Principia*.

IV. The first work on the *Brain*, together with small works.

V. The *Economy of the Animal Kingdom* and its Indexes, together with small works.

VI. The second work on the *Brain*, together with small works.

VII. The *Animal Kingdom* and its Indexes, together with small works.

Three volumes are now well under way. Besides the works reported on in former reports a number of the letters for Vol. I. have been printed; the *Chemistry*, for Vol. II., begun last summer, is almost printed; Part III. of the *Principia*, for Vol. III., (formerly referred to as Vol. II.), is printed. In all about 700 pages have been printed, and much work has been done to prepare for the press the remaining volumes. When this edition of the scientific works is finished it will be possible to prepare the much needed *General Index* of the scientific works, and a thorough and extended chronological *Biography* of Swedenborg. In fact, the final publication of two such works has been seriously discussed and planned both in Stockholm and America. When we have these three publications, the edition of the scientific works, the *Index*, and the *Biography*, which should include all the documentary materials and be fully illustrated, the exact study of Swedenborg's Philosophy will be placed upon a correct basis and receive a great impetus.

Turning now to the printing in America, progress may be reported on the *Worship and Love of God*, in press at Boston. Part I., including the marginal notes, is nearly completed. Fascicle 1, Part I., of the *Scientific and Philosophical Treatises* has been lately published. It fills 63 pages and contains the following treatises:

1. On the causes of things.
2. On the nature of fire and colors.
3. Remarks on mussels, snails, etc., in limestone; and also on slate.
4. On the height of water and the strong tides in the primeval world.
5. On the falling and rising of Lake Venner.

The matter of the exchange of publications with the Royal Swedish Academy of Sciences, placed in my hands by the Executive Committee, (*The New Philosophy*, July, 1905, page 252), was taken up in Stockholm last year in September, when a proposal that there be an exchange of publications was made by letter to Professor Gustaf Retzius, the President of the Swedenborg Committee, who said that the proposal would be duly considered.

The publication of the »Memoir respecting Emanuel Swedenborg as a Scientist and Natural Philosopher», the printing of which was begun, has been indefinitely postponed, in order that it may be made more complete.

In June I intend to sail for Europe on a third mission to Sweden to continue the work now in hand. Students of the scientific works of Swedenborg and of the Writings of the New Church fre-

quently have their attention directed to questions concerning the text, or to historical questions, which cannot be answered from sources in this country, but very easily in Sweden, where the manuscripts themselves and other sources are preserved. It is to be hoped that all such questions will be noted and sent to me in Stockholm, where I may be addressed in care of the Library of the Royal Swedish Academy of Sciences.

Respectfully submitted,

ALFRED H. STROH.

University of Pennsylvania, Philadelphia, April 26, 1906.

The Publication and Investigation of Swedenborg's Works at Stockholm, December, 1906.

(Reprinted from *The New Philosophy*, January, 1907.)

REV. FRANK SEWALL, M. A., D. D., PRESIDENT OF THE SWEDENBORG SCIENTIFIC ASSOCIATION:

Since arriving at Stockholm last July I have been busy with the investigation and publication of Swedenborg's works, and have continued to act as the official representative abroad of the Swedenborg Scientific Association, according to the resolution passed at Washington in 1904 at the Annual Meeting. The action of the General Convention last May in supporting the work here, and the continuation of the support from the Academy of the New Church, will contribute essentially to the result in which all students of Swedenborg are so deeply interested, namely, the rapid publication of the manuscripts of Swedenborg and the republication of the rare works out of print. This is the main work of the mission, but in addition I am making such supplementary investigations of Swedenborg's works as a whole, and in particular of his biography and position in the history of philosophy and the sciences, as time and circumstances will permit.

Readers of *The New Philosophy* for the last five years will find there a number of reports and articles describing the inception of

the work here and the progress which has been made by the Swedenborg Committee of the Royal Swedish Academy of Sciences in the publication of an edition of Swedenborg's scientific works. But it may be of present interest to briefly review the work since its beginning and to describe its present condition and future prospects.

The founding of the Swedenborg Scientific Association in 1898 marks the beginning of a new era in the study of Swedenborg's works, not only of the scientific and philosophical ones, but also of the Writings or theological works, for not only have students begun to investigate Swedenborg's scientific statements and his philosophy of nature and of man much more completely and thoroughly than ever before, but it has also become quite clear that thousands of passages in the theological works treating of scientific or philosophical subjects may be paralleled or connected with similar passages in the earlier works. There is here a great field of study and interpretation which has produced good fruits even now, although so comparatively little of the field has been cultivated, but it will certainly produce a great deal of good and valuable fruit in the future, when a larger area is available. At present many of the works are still unpublished, but a considerable number will see the light in the next few years, and it will be shown below how *all* of the works may be published in a uniform and complete edition.

The Association first turned its attention to the question of republishing the English translations of the scientific works, but in 1901 active steps were taken to copy certain of Swedenborg's MSS. and to publish them in America, as the result of a plan laid before the Association by its Treasurer, Mr. Carl Hjalmar Asplundh. He was also the agent of the Convention and Academy in their enterprise of phototyping the *Diarium Spirituale*, and the work of copying the MSS. as well as of editing the *Diarium* was placed in charge of the Rev. Joseph Boyesen, of Stockholm, until the summer of 1902, when I was sent to Europe as the agent of Mr. Asplundh. During the following year many of the scientific MSS. were copied, and some of the copies were carefully collated with the original MSS., while Vols. II. and III. of the *Diarium* were nearly completed.

In the meantime a new movement had joined hands with the Association, and as a result the work on the MSS., etc., has developed to such an extent that a comparatively complete survey in print of the contents will be possible within the next few years.

Professor Max Neuburger, of Vienna, had delivered an excellent address on Swedenborg's physiology of the brain, and also inspired and official document deploring the fact that a large work by Swedenborg on the brain was still lying in manuscript. As a result of Dr. Neuburger's action Professor Gustaf Retzius, of Stockholm, in the spring of 1902 made an examination of the manuscripts, but found difficulty in deciphering them. By a happy coincidence we met some time after my arrival in the summer, and began an investigation which brought out some interesting points. As a result of the great energy and interest of Professor Retzius the Swedenborg Committee was appointed by the Royal Swedish Academy of Sciences. The committee reported favorably, the printing of a series of scientific works was begun early in 1903, and since then I have been engaged in editing and seeing through the press three large volumes of the scientific works, as reported in detail in the July issues of *The New Philosophy* for the last few years. Other volumes are planned, and the Academy of Sciences has recently made an appropriation to continue with the printing of Vol. IV., Swedenborg's first work on the *Brain*, while Professor Retzius has most generously offered to pay the expenses of printing Vols. I. to III., and of the copying of materials for the whole edition. Introductions for the edition as a whole and for the various volumes will be furnished by the members of the Swedenborg Committee. An edition of 500 copies is being printed of Vols. I. to III., and it is to be hoped that sufficient subscriptions and donations will be received so that a larger edition and also plates may be provided for the future volumes. Any one interested in this matter of donations, the making of plates, or the support, by special contribution, of the objects of the mission here in Stockholm, may communicate with the President or Treasurer of the Association, or directly with the undersigned, when full particulars concerning the special needs of the work will be furnished. Permission to make plates has been received from Professor Retzius, and the making of them would be a preparation for the publication in the future of a complete edition of the works of Swedenborg, *Opera Omnia Emanuelis Swedenborgii*. Every line by Swedenborg which has come down to our times should be printed as soon as possible, and what could be better than to make plates of the works now in hand, and later on of the few which would remain, and gradually issue, in chronological order, all of the works and fragments? Another help in this same direction will be furnished by a medium which will now be described.

There are excellent prospects for the publication in Stockholm of a serial to be called *The Swedenborg Archives*, to contain Swedenborg's entire correspondence in the original languages and in an English translation, together with most of the records contained in Tafel's *Documents*, and miscellaneous, historical and bibliographical contributions, as also articles and reviews by specialists, such as the members of the Swedenborg Committee, who are deeply interested in this project and have promised their contributions for it. The original materials by Swedenborg to be published in the *Archives* should also be preserved in plates so as to be available for the proposed *Opera Omnia.*

The liberality of Professor Retzius has made it possible to have copies made of all documents by or concerning Swedenborg not contained in the Library of the Royal Swedish Academy of Sciences. This is the first necessary step, not only for the publication of the *Opera*, but also for the *Archives*, and students of Swedenborg will never forget the enlightened interest and liberality which has made all this work possible. So much for the printing of the works and records. A few words will now be added concerning the investigations which have been carried on since those made by Dr. R. L. Tafel from 1868 to 1870.

The investigations of Dr. Tafel were those of a pioneer, and have been fundamental to all subsequent work. He not only revised and republished, in English, most of the documents and information already obtained by previous research, but also unearthed a great deal of new information and edited a copious collection and commentary in his *Documents concerning the Life and Character of Emanuel Swedenborg*. But even in his own days additional information came to light, as, for instance, the verses by Swedenborg on the marriage of Johannes Kolmodin and Beata Hesselia, published in 1700, when the author was but twelve years of age, — which verses were referred to by Dr. Tafel himself in his *Swedenborg and the Doctrines of the New Church.* Documents also came to hand in England, and were duly reported in print by Dr. Tafel. Still other Swedenborgiana were brought to light by the researches of the Rev. E. J. E. Schreck, in Holland; and the Rev. C. Th. Odhner by his researches in Stockholm was enabled to publish a considerable collection of additions to the *Documents* by Dr. Tafel. The same investigator performed a fundamental work for the bibliography of Swedenborgiana in general, from 1688 to 1850, and for the history of the New Church, by the compilation of his *Annals of the New Church*, the result of much investigation and labor in America and

Europe, and the first bibliography which endeavors to aim at complete treatment. The Rev. James Hyde has also in recent years made researches in Europe and America with the special end in view of a complete Bibliography of Swedenborg's works, and when his work is published it will undoubtedly be found to fill a great gap, for Mr. Hyde's researches have been very wide and thorough.

Our researches have been carried on in America, England, France, Holland, Belgium, Germany, Denmark, Norway, but especially in Sweden, where the sources at Lund, Scara, Linköping, Upsala and Stockholm have been examined. The results have been most gratifying. A number of new works, poems and miscellaneous documents by Swedenborg have been brought to light, many of which have not before been known to New Church students, while a great mass of new information has been collected concerning Swedenborg's works and documents; his life and travels; portraits of Swedenborg, his relatives, friends, teachers and contemporaries; his connection with universities and learned societies, etc., etc. The plan is to print most of the works themselves in the edition now in hand by the Swedenborg Committee, and also in the proposed *Opera Omnia;* to gradually edit in the serial *Archives* the letters and miscellaneous documents by or concerning Swedenborg, observing in so far as possible a chronological order in the arrangement, and adding biographical, historical and bibliographical information in convenient form. The *Archives* will contain the original Swedish, Latin, French, German or English of the letters and documents, and this will be especially valuable to the student, who has hitherto not had access to most of the originals, which still lie in manuscript or have long been out of print. Since most of the originals are in Swedish libraries, the text can be very carefully edited here in Stockholm. Swedenborg's scientific correspondence is being edited in Vol. I. of the edition of the Academy of Sciences, and the same volume is to contain a new *Chronological List* of Swedenborg's MSS. and printed works from 1700 to 1772, together with references to subsequent editions of the original Latin and Swedish texts. This is the first and fundamental work, and both the letters and *List* will be reprinted in the *Archives*, the letters accompanied by an English translation and by numerous notes in an Appendix. A substantial contribution has also been received for the preparation of a complete *Bibliography of Swedenborgiana in Scandinavia*, to be executed by Miss Greta Ekelöf, the copyist since 1902 of numerous works and documents by Swedenborg, and now an Assistant Librarian in the Royal Swedish Academy of Sciences. All works by

Swedenborg, works concerning him and his literary productions, and also all New Church literature, contained in the principal libraries of Sweden, Denmark and Norway, will be carefully listed, and every effort will be made to collect from all parts of the world the literature still lacking, so that when the *Bibliography* is complete it will first of all show what literature is available in Scandinavia, the natural centre, and secondarily take note of the literature not available there. Societies or individuals desiring to contribute old or recent publications, or any rarities, should forward them to the *Royal Library, Stockholm*, or to the undersigned at the address given below. If two or more copies of a given publication are available, they will be gladly received by the principal libraries in Sweden, the librarians of which are much interested in completing the collections of Swedenborgiana and have asked me to collect all works by or concerning Swedenborg, and New Church literature in general, including periodicals, etc., so that the country which produced Swedenborg may have access to the later, as it already possesses the most complete collections of the earlier literature. As many as six copies of any publication whatever can if forwarded to me be easily placed in the principal libraries of the Scandinavian North. This matter is also of special interest to New Church students of Swedenborg who may happen to visit Sweden, for the libraries here should contain the whole literature for purposes of reference.

It is very desirable that all societies or individuals who are interested in the objects referred to in the present communication, and able to do something to forward their accomplishment, should communicate with the President or other officials of the Swedenborg Scientific Association, or directly with the undersigned.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, Sweden.

December, 1906.

Report of the Work in Sweden, April, 1907.

(Reprinted from the *Journal* of the General Convention, Boston, 1907.)

REV. FRANK SEWALL, M. A., D. D., PRESIDENT OF THE SWEDENBORG SCIENTIFIC ASSOCIATION:

As stated in the *New Philosophy* and in the *New-Church League Journal* for January, the edition of Swedenborg's scientific texts to be issued by the Royal Swedish Academy of Sciences is planned to contain seven volumes, the first three comprising Swedenborg's contributions to geology, chemistry, mechanics, physics and cosmology, the remaining four his contributions on anatomy and physiology. Among various additional materials for the volumes are Swedenborg's scientific correspondence for Volume I. and a Chronological List of Swedenborg's Manuscripts and Printed Texts, to be printed in separate form as an Appendix to Volume I., and to contain not only all the manuscript and original printed texts as referred to in the Rev. James Hyde's recently published Bibliography, a very pains-taking and valuable work, but also a number of works by Swedenborg in manuscript and print not there referred to. The volumes of the edition will also contain Introductions in English by the members of the Swedenborg Committee and Historical and Textual Notes by the Editor. For the sake of convenience, reference to a given entry in all the volumes, a General Index will be added when the printing of the texts is completed, instead of scattering the references to a single subject through the seven volumes. This will also permit of a chronological arrangement of the references under each subject. The printing of the letters in Volume I. is now nearly completed, the concluding portion of Volume II. is well advanced, and the texts in Volume III. are completed. A Circular concerning the publication of the edition and especially of those three volumes will soon be distributed, and subscribers may in the meantime address their subscriptions to the President of the Swedenborg Scientific Association, the Rev. Frank Sewall, 1618 Riggs Place, Washington, D. C., or to the Treasurer of the Association, the Rev. Charles E. Doering, Bryn Athyn, Pa., or to the undersigned at the address given below. The price per volume for Volumes I. to III. is $2.00, or $6.00 for the set of three volumes, as already announced. The volumes will be delivered to subscribers n America free of extra charges.

In my former communication, mention was made of a plan to make plates of the texts now being printed, to facilitate the proposed future edition *Opera Omnia* of Swedenborg's texts. Prof. Gustaf Retzius has authorized the copying of all documents by or concerning Swedenborg for deposit in the library of the Royal Swedish Academy of Sciences, while Commodore O. W. Nordenskjöld has made a generous contribution for the Archives and Bibliography. Never before have the prospects of success in the publication of Swedenborg's works and documents and of historical information concerning him been so bright as now. In the ordinary course of things, a strong flood of light will be thrown upon these relics of the "Aristotle of the North" during the next few years, and new chapters will be written in the scientific history of Sweden and in the history of philosophy.

It may be of value to describe in some detail the contents of the three volumes, the printing of which is now nearly completed. Volume I. will contain a general Preface for the edition as a whole, by Prof. Gustaf Retzius, President of the Swedenborg Committee, describing the history of the committee's work and the plan of the edition. Then will follow the Introduction by Prof. Alfred G. Nathorst on Swedenborg's contributions to geology. After these introductions, which it should be observed are in English, follow the Swedish and Latin texts by Swedenborg, treating for the most part of geological subjects, the longest one being the *Miscellanea Observata*. Then come about ninety letters of Swedenborg's scientific correspondence, including not only his own letters, but those of Polhem, Eric Benzelius, and others. Most of these letters have never been published in the original, and as the English translations are incomplete and inaccurate, the original text will be welcomed by students with special interest. After the Letters come the Historical and Textual Notes by the Editor, in English, and, as a separate publication in the form of an Appendix, a Chronological List of Swedenborg's Manuscripts and Printed Texts. Volume II. will comprise an Introduction by Prof. Svante Arrhenius on Swedenborg's Chemistry and Physics; the *Prodromus Principiorum Rerum Naturalium*, usually referred to in English as Swedenborg's Chemistry; all the other little works published by Swedenborg at Amsterdam in 1721 at the same time as the *Prodromus;* the *Dœdalus Hyperboreus* and a collection of short works and papers from 1715—1722, and the Historical and Textual Notes. Volume III. will contain an Introduction by Prof. Svante Arrhenius on Swedenborg's Cosmology; the second or *Lesser Principia;* Part III. of the "larger"

Principia of 1734, and other cosmological contributions, and the Historical and Textual Notes. Each volume will fill about four hundred pages, and will contain a number of figures or illustrations, some of them never before published. Volumes I. to III. will give the most complete view of Swedenborg's philosophy of the physical world ever furnished. Volumes IV. to VII. are planned to contain Swedenborg's works on the Brain and his most important contributions to anatomy and physiology, including the *Œconomia Regni Animalis* and the *Regnum Animale*. Swedenborg's own valuable unpublished Indexes to the latter two works will be included, and when the edition is completed a General Index of all the volumes will be added.

Besides the research work on the manuscripts of Swedenborg, and other documents relating to them, in Stockholm, researches have also been carried on at Upsala in the library of the "nation" in which Swedenborg was a student two hundred years ago, and in the University Library "Carolina Rediviva," concerning the student life of Swedenborg's time and the history of the university during that period. The results of these researches, when added to those made in Scandinavia and other parts of Europe since 1902, furnish a very considerable body of new documentary information concerning Swedenborg's personal and literary biography which, it is hoped can be reported in full in the Swedenborg Archives. In the Royal Library at Stockholm I was so fortunate as to discover a few weeks ago an old printed catalogue of the large library in Swedenborg's possession at his death; there were over five hundred volumes in the ancient and modern languages, on scientific, philosophical, historical, and theological subjects, evidently the accumulation of a lifetime, made in the course of Swedenborg's extensive travels and studies. A new light has also been thrown on Swedenborg's university life and philosophical antecedents by the investigation of a fierce "Cartesian Controversy", which raged at Upsala during the latter half of the Seventeenth Century, just before Swedenborg's student life from 1699-1709, between the Aristotelians and the Cartesians. The issue resulted in a great victory for the Cartesians, the establishment of greater freedom of thought, and a new era of scientific and philosophical thought in Upsala and Sweden. I hope to present a more detailed account of these researches in some Notes on Old and New Swedenborgiana for the next *New Philosophy* and in a paper for the next Annual Meeting of the Association.

A number of new manuscripts by Swedenborg have recently been brought to light in the Archives of the House of Nobles and

in the library of the Royal Swedish Academy of Sciences, and some clues have been found of additional new manuscripts. Professor Retzius has also furnished the means for a journey of investigation to Poland, Russia, and North Germany, the immediate reason being the discovery of some new manuscript letters by Swedenborg in Russia. I shall also take the opportunity to search for new Swedenborgiana in the libraries at St. Petersburg, Königsberg, and elsewhere.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences, Stockholm, Sweden, April, 1907.

Report on the Copying and Publication of Swedenborg's Scientific Works. Annual Report for 1906-1907.

(Reprinted from *The New Philosophy*, July, 1907.)

TO THE SWEDENBORG SCIENTIFIC ASSOCIATION:

In previous reports to the Association, and in two reports recently sent to the President, I have described in some detail the progress in the copying and publishing of Swedenborg's scientific works which have been going on for some years. This work has been steadily increasing in volume, until to-day it promises to place in the hands of students of Swedenborg practically all of the sources necessary for a general survey of Swedenborg's biography and of the system of philosophy constructed by him during the years 1710-1745.

Three volumes of the edition of Swedenborg's scientific works under publication at Stockholm by the Swedenborg Committee of the Royal Swedish Academy of Sciences are nearly completed. These three volumes contain many of the works which develope Swedenborg's philosophy of the physical world, and the subsequent volumes will contain most of his works in analysis of the human body. When this edition was undertaken by the Swedenborg Committee permission was received from Urbana University, the Association, and the Academy of the New Church, to make free use of certain copies of Swedenborg's MSS. in their possession. The Committee has also had a number of MSS. copied, and within the

past year Professor Gustaf Retzius has authorized the copying of all original documents by or concerning Swedenborg for deposit in the Library of the Royal Swedish Academy of Sciences, while Commodore O. W. Nordenskjöld has contributed to the important work of editing and publishing the proposed *Swedenborg Archives* and a complete *Bibliography of Swedenborgiana in Scandinavia*, which have been referred to in previous reports. The work of editing Swedenborg is thus making great progress here in Stockholm, and in addition researches are being made not only in Sweden, but also beyond its borders, concerning new Swedenborgiana and the position of Swedenborg in the history of philosophy and the sciences. It is important that plates should be made of all Swedenborg's texts now being printed here, and there is hope of the accomplishment of this important work, the plan being to put the plates in the possession of the Association.

Fascicle 2, Part I., of the Association's series of *Scientific and Philosophical Treatises* by Swedenborg is now in press and will contain the following papers:

1. On various kinds of soil and mud.
2. New ways of discovering mines.
3. Swedenborg's letter to Jacobus a Melle.
4. Exposition of a hydrostatic law.
5. In general concerning the motion of the elements.
6. Arguments for the Principia.

The new edition of the *Worship and Love of God*, in press at Boston, has been delayed in publication during the past year, partly on account of the great pressure of other work here at Stockholm, and partly on account of the difficulty of deciphering some of the marginal notes at the close of Part I. But I shall be able to finish this important work before the next Annual Meeting of the Association.

Some months ago Commodore O. W. Nordenskjöld presented me with two rare documents signed by Swedenborg, one of them containg a fine impression in wax of Swedenborg's signet. I now present them to the Association, together with some rare books from the library of Dr. James John Garth Wilkinson, part of which was recently sold at London. I shall forward these documents and books to the Secretary. They will be useful some day when the Association has its own headquarters and Library.

Mr. Robert A. Shaw, editor of the *New Church League Journal*, who visited Stockholm last October and thus had an opportunity of directly inspecting the work here, has most diligently co-operated

in advertising the edition of the scientific works under publication here, and has called emphatic attention to the importance of the work in the columns of the *Journal*. The collecting of subscriptions for the volumes now advertised is an important help, for the financial support thus gained will increase the effectiveness of the work as a whole.

The proposal to the Swedish Government by the Swedenborg Committee of the Royal Swedish Academy of Sciences to have removed from London to Stockholm the remains of Emanuel Swedenborg shows what a disposition there is among the successors of the earlier Swedish scientists to do honor to the memory of a great Swede and a famous investigator. Over fifty years ago (1852) the same Academy honored the name of its great alumnus by striking the annual medal in memory of him: "*Tantoque exsultat alumno!*"

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences, Stockholm, May, 1907.

Report of the Work in Sweden, December, 1907.

(Reprinted from *The New Philosophy*, January, 1908.)

REV. FRANK SEWALL, M. A., D. D., PRESIDENT OF THE SWEDENBORG SCIENTIFIC ASSOCIATION:

Some of the information which I shall record in this communication is already well known to you and to Treasurer Doering, as we had the opportunity of discussing the work here during your visit to Sweden last summer. But there is also some news, and besides, the readers of the *New Philosophy* may welcome a continuation of former reports.

Vol. I. of the new edition of Swedenborg's scientific texts was laid before the ordinary meeting of the Academy of Sciences on September 11th. The Appendix and Notes, to be published separately, are to include certain contributions which have not yet been received, together with historical and textual notes. Introductory materials and notes have now been received from Professor Arrhenius, but there is still much work to be done before Vols. II. and III. can be published. The extension of the series of volumes by

the inclusion of the entire *Principia* of 1734, and even of the works on *Copper* and *Iron*, is now under consideration, and those three works, constituting the *Opera Philosophica et Mineralia*, may be included in the series if a sufficient number of subscribers can be secured. The best way to publish the three volumes in question may be to reproduce them in *facsimile*. These works are at the present time arousing some interest among mineralogists in Sweden, and there has even been planned an edition in Swedish.

As a result of the great interest which you and Treasurer Doering took in the catalogue of Swedenborg's library, which you inspected in the Royal Library here at Stockholm, I discussed ways and means with Treasurer Doering and Professor Retzius, with the result that the zinc plates of the catalogue, to be used for the reproduction in the Appendix to Vol. I., were made at once and a *facsimile* edition of 600 copies with the title *Catalogus Bibliothecæ Emanuelis Swedenborgii*, etc., was printed on genuine, wood free, imported Dutch paper. Copies may be secured from the Association. It seems likely that the first eight pages only of the catalogue refer to Swedenborg's library, the two Appendices having another origin. This would mean that Swedenborg's library consisted of some 400 vols. The high value of these references to Swedenborg's sources will be appreciated by every careful student.

The little work by Swedenborg on Charles XII., seen at the Greifswald University Library during my visit in 1905, is being reproduced in a *facsimile* edition, one of the two copies at Greifswald having lately been presented to the Library of the Royal Swedish Academy of Sciences, no copy having thus far been found in Sweden. As a result of efforts to collect Swedenborgiana for the libraries here and elsewhere in Scandinavia, some valuable accessions have recently been received. The Librarian of the Academy of Sciences is prepared to receive copies of all editions of Swedenborg's texts, as well as of biographical Swedenborgiana and reference works. The Swedenborgiana are to be kept in a special room in the new Library of the Academy to be built at Frescati near Stockholm.

A new edition of Professor Nathorst's introduction to Vol. I., on "Emanuel Swedenborg as a Geologist", including a number of changes and additions, is now in press; a large edition will be printed.

All the printing referred to above, as well as matters in connection with the distribution of Vol. I., keep me very busy, but still I have found time to make preparations for the first issue of the proposed *Swedenborg Archives*, to plan for a "Swedenborg Museum",

and to supervise the phototyping of the *Index Biblicus*, recently placed in my charge by the Swedenborg Society of London. The Museum referred to deserves a few words of description. After receiving knowledge of the existence of a fine portrait of Sara Behm, Swedenborg's mother, it occurred to me that a collection of portraits of Swedenborg, his parents and relatives, such as Eric Benzelius, together with various works of Swedenborg and objects which belonged to him, should be placed in some suitable building in Stockholm and be open to inspection by the public. With this end in view I some months ago approached Dr. Upmark of the "Northern Museum" (*Nordiska Museet*, a recently opened museum of Scandinavian ethnology), and received such encouragement that a list of objects was prepared and submitted to him, and afterwards to Dr. Sahlin, the chief of the museum. He has become so impressed with the desirability of a "Swedenborg Museum" that he has promised to arrange and open one in the near future in a special room devoted to the purpose. This he was the more willing to do as the Museum already possesses a fine portrait of Swedenborg by Fredrik Brander, painted a year before the one by the same painter in the Academy of Sciences (reproduced in Vol. I. and also separately), as well as Swedenborg's organ, summer house, and his violet glass ornaments which once adorned the roof of the summerhouse. It is in the ethnological park "Skansen," a department of "Nordiska Museet," that the summerhouse, and in it the portrait of Swedenborg, his organ, etc., have been visited in recent years by New Church visitors from America and England. I have secured a number of objects for the proposed museum by applying to the members of the Swedenborg family and others.

The documents and books referred to in my last report, as well as two silver medals of Swedenborg struck by the Royal Swedish Academy of Sciences, and by the Royal Swedish Academy [of Letters], which I received from Professor Retzius, have been forwarded to the Secretary of the Association in the care of Treasurer Doering and of my friend, Amandus Johnson, M. A., a fellow of the University of Pennsylvania, who is investigating the history of the Swedish colonies in America, and is returning to America.

In conclusion, I must express my appreciation of the encouraging message from the Association which you personally conveyed to me, as well as my conviction that the visits to Sweden last summer of yourself and Treasurer Doering will be of much value for the work here and for the uses of the Association. The great importance of the publication of Swedenborg's scientific works, undertaken by the

Association and the Academy of Sciences, is becoming manifest and awakening active interest not only in America, but also in England and other countries. By the publication of Swedenborg's own works, and by historical and critical information concerning them, many misconceptions will be removed and the way prepared for intelligent study.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, December 10, 1907.

Report of the Work in Sweden, February, 1908

(Reprinted from *The New Philosophy*, April, 1908.)

REV. FRANK SEWALL, M. A., D. D., PRESIDENT OF THE SWEDENBORG SCIENTIFIC ASSOCIATION.

In a communication dated December 10, 1907, (See *The New Philosophy*, January, 1908), I described the progress of the work here at Stockholm; the publication of Vol. I. of the edition of Swedenborg's texts, with introduction by Professor Alfred G. Nathorst, laid before the ordinary meeting of the Academy of Sciences on September 11; the publication of the *fascimile* Catalogue of Swedenborg's library, as well as the proposed publication of other Swedenborgiana and the prospects for a Swedenborg Museum. Since December much additional progress has been made, and I shall now proceed to describe the status of the printing up to date, as also the other projects which will be of interest to members of the Associatinn and readers of *The New Philosophy*.

The Printing of Swedenborg's Scientific Texts and other Swedenborgiana.

Having received last November from Professor Svante Arrhenius introductory matter and notes concerning Swedenborg's contributions to chemistry, physics and cosmology, I made the necessary preparations for the appearance of Vol. II. of the texts, *Cosmologica*. This volume, containing the second *Principia* ("Lesser Principia"), *Argu-*

ments for the Principia, *Summary of the Principia*, and *Third Part* of the *Principia* of 1734, with the Introduction by Professor Arrhenius on *Emanuel Swedenborg as a Cosmologist*, was laid before the ordinary meeting of the Academy of Sciences on the 12th of this month (February) by Professor Gustaf Retzius, president of the Swedenborg Committee. Professor Retzius also laid before the Academy a beautiful photograph of the portrait of Swedenborg, by Fredrik Brander, painted in 1768, and now in the possession of the "Northern Museum," where it will form part of the "Swedenborg Museum." This remarkable portrait, which will appear in Vol. II., was painted by Fredrik Brander in 1768, one year before his second (?) portrait of Swedenborg, which, in 1844, came into the possession of the Academy of Sciences. The portrait of 1768 is, perhaps, the best likeness of Swedenborg in existence.

It may be of interest to explain, in some detail, the changes which have been made in the three volumes now in hand, and why their publication has been delayed. The reader of *The New Philosophy* for the last few years will have observed that work was begun with the "Lesser Principia" in 1903, but as interest in Swedenborg's MSS. increased the scope of the proposed publications was gradually extended until, finally, three volumes were in hand, two of which have now been laid before the Academy of Sciences. In the autumn of 1906 it was supposed that the three volumes would be ready for publication the following spring, but during the winter the collection of letters in Vol. I. was considerably extended, and the *Chronological List* of Swedenborg's Manuscripts and Texts also required so much work that Vol. I., *Geologica et Epistolæ*, did not appear until September, 1907. Still more work, in great part unforeseen, was required before the introductory matter and notes for vols. II. and III. could be furnished in November, 1907. Then it was decided to issue as Vol. II. the *Cosmologica*, formerly referred to as Vol. III., to print the notes by Professor Arrhenius on Swedenborg's physics and chemistry in the *Appendix* to Vol. I. and in Vol. III., and to further extend the latter volume, including a suitable introduction for the miscellaneous contents, which will supplement the *Prodromus Principiorum* of 1721 and the *Dædalus Hyperboreus*, etc. Not only will the student of Swedenborg's early texts welcome the appearance of the miscellaneous rarities to be included in Vol. III., but the volume will be of special value in connection with the early history of the Scientific Society of Upsala, the Bicentenary of whose foundation will be celebrated in 1910. Swedenborg was for years closely connected with the Scientific Society.

The following materials are now planned to be included in the Appendix to Vol. I.:

1. An English translation of Professor Hjalmar Sjögren's contribution in Swedish concerning Swedenborg's MS. on *Metallic Veins*, recently published in the December issue of *Geologiska Föreningens Förhandlingar*, Stockholm.
2. The text of Swedenborg's MS. on *Metallic Veins.*
3. The text of Swedenborg's MS. on *Soils and Muds.*
4. A *Chronological List* of Swedenborg's MSS. and printed Texts.
5. Catalogue of Swedenborg's Library.
6. Notes.

The contribution by Professor Sjögren is of much interest in connection with Swedenborg's mineralogy and doctrine of effluvia, and the publication of the two MSS. by Swedenborg will make accessible in Vol. I. all his shorter geological contributions, which have been included in Part I. of the Association's series of *Scientific and Philosophical Treatises by Emanuel Swedenborg.*

Since the distribution of the *Prospectus* last September, interest has been strengthened in the proposal to include in the edition a photolithographic *facsimile* of the *Opera Philosophica et Mineralia* of 1734, as Vols. IV. to VI. This could easily be accomplished if a sufficient number of orders can be secured in America and England, and then the student of Swedenborg's physical philosophy, and of the later works on anatomy, physiology and psychology, would possess in the edition a working library of practically all of Swedenborg's works on natural science and philosophy. The great collections of notes and extracts which Swedenborg has left us, while of much importance for the student of Swedenborg's biography and the development of his comprehensive researches, form a class by themselves.

At the meeting of the Academy of Sciences on February 12, when Vol. II. of the texts was laid before the meeting, Professor Müller was also made a member of the Swedenborg Committee in succession to Professor Lovén. The new member of the Committee is Professor of Anatomy at "Karolinska Institutet," the Medical School of Stockholm. At the same meeting Professor Retzius laid before the Academy, in connection with the portrait of Swedenborg, referred to above, a fine collection of photographs of a number of the Academy's portraits, received from Mr. Robert A. Shaw, of Brooklyn. The photographs include several distinguished members of the Academy, who were friends of Swedenborg, or admirers of his works.

The Catalogue of Swedenborg's Library, printed here last November by Aftonbladet's Press, from the zinc plates made for the *Ap-*

pendix to Vol. I. of the scientific works, and with the assistance of the Association, has aroused considerable interest, not only in Sweden, but also in America and England. It is considered as certain by all the librarians and students here, whom I have consulted, that the two appendices to the *Catalogus* do *not* refer to Swedenborg's library. In this connection it is also of interest to consider the question, whether many works were removed from Swedenborg's library before the auction catalogue was published, having either been presented to friends by Swedenborg himself or disposed of by his heirs. It is, of course, very difficult to arrive at accurate conclusions as to the extent of such disposal, but we know that Swedenborg presented some works to friends, notably, the two handsome folio volumes of Swammerdam's *Biblia Naturæ* to Von Höpken. A few days ago there was sold at Klemming's Antiqvariat, here in Stockholm, to Mrs. Hierta-Retzius, who intends to present it to the "Swedenborg Museum", a handsome folio volume, interleaved, with the autograph, "Em: Swedenborg:" on the titel-page. This work, *Synchronistische Universal = Historie * * * von Theodor Berger, D. * * * Coburg und Leipzig * * * 1755*, is as indicated by the title[1], an historical reference work. The contents are very interesting, indeed, and it is significant in connection with the question of Swedenborg's library, that this work, dated 1755 on the title-page, came into Swedenborg's possession long after his spiritual eyes were opened, and that it is not mentioned in the auction catalogue. There are no annotations in the body of the work, but a few of the interleaved pages have been torn out.

Preparations are nearly completed for the facsimile edition of Swedenborg's *Festivus Applausus in Caroli XII. adventum in Pomeranian suam*, 28 pages in small quarto, printed at Greifswald, in 1714, and known to students of Swedenborg since 1905. As mentioned in my preceding communication, one of the two copies seen at Greifswald has lately been presented to the Library of the Academy of Sciences, Stockholm.

After long preparation, the beginning of a volume on *Emanuel Swedenborg as a Scientist* has been made with the printing of a re-

---

[1] Synchronistische Universal = Historie der vorgenehmsten Europæischen Reiche und Staaten, von Erschaffung der Welt bis auf das jetztlauffende 1775. Jahr, aus bewæhrten Urkunden, mit beygefuegten Anmerkungen, darinnen einige vorkommende historische Zweifel erötert, und die beruehmtesten Gelehrten dergestalt angefuehret werden, dasz, vermittelst einer Tabelle, was zu einer Zeit merkwuerdiges vorgefallen, auf einmal uebersehen werden kan, in XXXVIII Tabellen entworfen, und mit noethigem Register versehen von Theodor Berger, D. der Buergerl. Rechte und Welt = Geschichte oeffentlichen Lehrer auf dem academischen Gymnasio zu Coburg. [Vignett, "cadunt et surgunt."] Coburg und Leipzig, Druckts und verlegts Georg Otts, Herzogl. Saechs. Hof = Buchdrucker und privil. Buchhaendler. Anno 1755.

vised edition of Professor A. G. Nathorst's Introduction on *Emanuel Swedenborg as a Geologist*, and the other introductions for the edition will follow serially in due course. Preparations have also been made for the first issue of the *Swedenborg Archives*.

The removal of Swedenborg's remains from London to Stockholm.

The Swedenborg Committee of the Royal Swedish Academy of Sciences having advocated the removal of Swedenborg's remains from London to Stockholm, the Academy of Sciences approached the Swedish Government. The Swedish Government has, this month, provided that the cruiser "Fylgia," when touching next April at Dartmouth, England, shall receive Swedenborg's remains and convey them to Carlscrona, Sweden, where the Academy of Sciences will take charge of them and provide for their burial in the churchyard of Solna, near Stockholm, where Mrs. Hierta-Retzius has provided a site next to the tomb of the poet and late Royal Librarian Snoilsky. The remains of several great scientists and poets lie at Solna, and it is proposed to raise over the tomb of Swedenborg a handsome marble monument with a bronze medallion and inscriptions. There has also been much discussion as to the building of an imposing mausoleum.

The "Swedenborg Museum".

As referred to in my last communication, Dr. Bernhard Sahlin, the chief of the "Northern Museum," Stockholm, had promised to arrange and open a "Swedenborg Museum". In December I submitted to Dr. Sahlin a final list of objects, and he has this month begun collecting them for the proposed museum, which will be placed in a special room in the Northern Museum. The Rev. C. J. N. Manby has warmly seconded our efforts by appealing in the February issue of his monthly, *Nya Kyrkans Tidning*, for suitable objects and for contributions to purchase a portrait of Swedenborg's mother and other rarities.

Swedenborg's Works and Swedenborgiana for Scandinavian Libraries.

Besides the measures mentioned above, to preserve and honor Swedenborg's memory, of interest even to those who are not special students of his works, there is a project which cannot but appeal to every thorough student of Swedenborgiana, namely, the collecting of all editions of Swedenborg in the libraries at Stockholm and Upsala.

Hearty interest has already been shown in this matter in Europe and America, and a number of valuable contributions have been made, particularly to the Library of the Academy of Sciences, where accessions will be especially welcome. Most of Swedenborg's MSS. are there and the study of them is greatly facilitated by the editions of texts as well as by biographical Swedenborgiana and reference works. All editions of Swedenborg's works, as well as all works of a collateral nature, including journals, catalogues, announcements, etc., etc., will be welcome at the Royal Library and at Upsala University, as well as at Lund University. There are also two other Scandinavian libraries to which contributions might well be made, the Royal Library at Copenhagen, and the University Library at Christiania. At all of these libraries there already are good collections of Swedenborgiana, as I have seen by personal inspection, and the Royal Library has the most complete collection of printed editions of Swedenborg in existence, due to the indefatigable work of former Librarian Klemming. Certain works by and concerning Swedenborg would also be useful in the State Archives and Northern Museum, Stockholm, and in the Diocesan Libraries of Linköping and Skara. Anyone desiring special information concerning these library matters should address the president of the Association, the Rev. Frank Sewall, 1618 Riggs Place, Washington, D. C., U. S. A., or the undersigned.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, February 25, 1908.

Report of Progress in the Investigation and Publication of Swedenborgiana. Annual Report for 1907-1908.

(Reprinted from *The New Philosphy*, July, 1908.)

TO THE SWEDENBORG SCIENTIFIC ASSOCIATION:

Since reporting to the Association a year ago I have sent to the president two reports concerning the progress of the work, and shall now recapitulate and bring up to date the account of events here.

The New Edition of the Scientific Works.

Since the last annual meeting a number of Swedenborgiana have been published at Stockholm. Two volumes of the new edition of the scientific works have appeared. Vol. I., *Geologica et Epistolæ*, with a preface by Professor Gustaf Retzius concerning the history of the edition and an introduction by Professor A. G. Nathorst, on *Emanuel Swedenborg as a Geologist*, was laid before the ordinary meeting of the Royal Swedish Academy of Sciences on Sept. 11th; Vol. II., *Cosmologica*, with an introduction by Professor Svante Arrhenius, on *Emanuel Swedenborg as a Cosmologist*, at the meeting on Feb. 12th. A prospectus was issued in September, announcing Vols. I. to III. Many subscribers have sent in orders, so that together with the large number of subscriptions collected by the Treasurer of the Association and others and including presentation copies to learned bodies, and to individuals, about one-half of the edition of 500 is already exhausted. This shows clearly that plates of the texts going through the press should be made so as to facilitate a future edition. It will be forever easy for future editors to re-issue texts, now that the first edition is published, but even the setting up and proof reading of the Swedish and Latin contents, if it were to be done all over again in an entirely new edition, would involve a great expenditure of time and money. The president and treasurer of the Association were informed of these facts and furnished with an exact knowledge of the conditions when I had the pleasure of meeting them here last summer.

Proposed Vols. IV., V., VI.

If a sufficient number of subscribers can be secured for a *facsimile* reproduction of the *Opera Philosophica et Mineralia*, they will be issued as Vols. IV. to VI. of the edition, which certainly is very desirable. According to this plan Vols. I. to VI. would represent Swedenborg's physical philosophy, and the subsequent volumes would contain his contributions to anatomy, physiology and psychology. Anyone who has followed the reports of the work here since 1903 will have observed that the proposed edition has been gradually expanded. This also applies to the contents of Vols. I. to III. It was finally decided to include in Vol. I. all letters written before Swedenborg's death, which in any way refer to his scientific works. This involved more work than all the rest of the contents hitherto

in hand, for hardly any attempt had ever been made to edit the originals of these difficult manuscripts. Thus Vol. I. did not appear until September. In November I received the Introduction for the *Cosmologica*, which were then issued as Vol. II., exchanging places with the present Vol. III. The latter has also been much expanded and is to include, besides the *Prodromus Principiorum* and other works of 1721, the *Dædalus Hyperboreus* and a miscellaneous collection of treatises and documents. The student and biographer will thus have accessible a tolerably complete collection of the numerous sources which have for the most part lain hidden in obscurity, at least in so far as the originals are concerned. When all these sources are accessible it will be possible to understand how Swedenborg developed his system of science and philosophy.

New Works published.

Besides Vols. I. and II. of the edition the following publications have appeared:

Catalogus Bibliothecæ Emanuelis Swedenborgii, published at Stockholm, November, 1907.

Emanuel Swedenborg as a Geologist, being the first section of *Emanuel Swedenborg as a Scientist*, published at Stockholm, March, 1908.

Emanuelis Swedenborgii Festivus Applausus in Caroli XII. in Pomeraniam suam adventum, published at Stockholm, April, 1908.

Scientific and Philosophical Treatises by Emanuel Swedenborg, Part I., Fascicle 2, published by the Association at Bryn Athyn, April, 1908. With the publication of this fascicle all of Swedenborg's shorter geological treatises have made their appearance in English.

The interesting Catalogue of Swedenborg's library has been so fully referred to in previous reports that little need be said here. The zinc plates from which the edition was printed were loaned for the purpose by the Royal Swedish Academy of Sciences.

The reprint of Professor Nathorst's *Emanuel Swedenborg as a Geologist* forms the first section of a series of papers on *Emanuel Swedenborg as a Scientist*, to contain contributions by specialists on Swedenborg's observations and theories. This publication may be regarded as the realization of the "Memoir respecting Emanuel Swedenborg as a Scientist and Natural Philosopher," the publication of which was postponed in 1906 (*New Philosophy*, 1906, p. 95.)

The *Festivus Applausus* has appeared in an advance edition of thirty copies. The remainder of the edition will be published after a possible addition to the title pages shall have been decided on.

Works in progress.

The new edition of the *Worship and Love of God*, in press at Boston, has not been finished during the past year, although I expected to have it published by this time. My hands have been so full of most urgent work here that I have not had the time to devote the careful and uninterrupted study to the revision of this important work which I feel is necessary. I have, however, practically completed it up to end of Part II., that is the longer portion of the text, and shall make every effort to finish the remainder this year.

There are now in press sections 2 and 3 of *Emanuel Swedenborg as a Scientist*, by Professor Hjalmar Sjögren and Professor Svante Arrhenius.

In the separately published Appendix to Vol. I. of the scientific works will be included Swedenborg's papers on *Soils and Muds* and *New Ways of Discovering Mines*, together with a review of the latter by Professor Hjalmar Sjögren. There will also be included a *Chronological List* of Swedenborg's manuscripts and printed works, in which will be reported the results of much investigation since 1902 and the titles of compositions by Swedenborg in manuscript and print which have been discovered since 1903. It is very desirable that copies of all the texts of Swedenborg be placed in the main Swedish libraries in the near future, for the *List*, according to the custom here, will refer to the location of copies in the main libraries. Since the presentation some months ago to the Library of the Royal Swedish Academy of Sciences by the Greifswald University Library of one of the two known copies of Swedenborg's *Festivus Applausus in Caroli XII. adventum in Pomeraniam suam*, copies of all the published works of Swedenborg, printed during his lifetime, are accessible in the great Swedish libraries. The same cannot be said of any other country. This is one strong reason for the publication of the proposed *Swedenborg Archives*, preparations for which have been made. Generous contributions have been received from the late Commodore Captain O. W. Nordenskjöld and his wife for the purpose of preparing and publishing these *Archives*. It is proposed to publish reproductions of Swedenborgiana together with historical and bibliographical information. Strangely enough

many rare letters and documents have been published in German and English, while the original Swedish and Latin sources have been suffered to lie neglected and inaccessible decade after decade, some of them having even been lost or destroyed by fire. It is high time that a new policy be inaugurated.

From the above it will be seen that substantial progress has been made during the past year in publishing Swedenborgiana and in making preparations for future work. Vol. III. of the edition is so far advanced that it should be in the hands of the subscribers this year. The succeeding volume on the *Brain* is also in hand and its publication will be carried on as rapidly as possible, while if the proposed reproduction of the *Opera Philosophica et Mineralia* can be included in the edition as Vols. IV. to VI. three additional volumes should see the light in the not distant future, as such reproducing can be done very rapidly.

Work of the London Swedenborg Society.

I hope to arouse some interest in this project in England when I meet the members of the Swedenborg Society's Committee next month, they having invited me to address the annual meeting of the Society on June 9th. The Committee last autumn placed in my charge the supervision of the *Index Biblicus*, which is being phototyped here. Much attention has been required by this work, but I did not hesitate to undertake it, knowing that the Association would not object to my taking this work in hand and bringing it to a successful conclusion, as in the case of *Diarium Spirituale*, completed last year.

All of the publication matters referred to above, as well as two other projects to which I shall now refer, have made it advisable that my proposed journey to Russia, Poland and North Germany be postponed, but I hope to make the journey in due course to examine the Swedenborgiana in St. Petersburg and to secure information concerning Kant and Swedenborg at Königsberg.

National Honor to Swedenborg.

On April 17th I accompanied Professor K. Hasselberg, President of the Royal Swedish Academy of Sciences, and Captain G. W. E.

Svedenborg, the present head of the Swedenborg family, to Carlskrona in South Sweden, to be present at the landing and reception of Swedenborg's remains. The Swedish cruiser "Fylgia" had taken the remains of Swedenborg on board at Dartmouth on April 8th; they were landed at Carlskrona on the 18th. As the representative of the Association I was present when the casket was removed from the "Fylgia" and escorted by a procession to the adjacent Admiralty Church, where it is deposited. On the 19th of this month it is to arrive at Upsala and be deposited with due ceremony in the cathedral. Sweden is paying honor to her great son.

In January, 1907, the Royal Swedish Academy of Sciences approached the Government with a proposal that Swedenborg's remains be removed from London to Stockholm. Since then there has been a great deal of newspaper discussion concerning Swedenborg and the place where his remains should be deposited. The Government finally accepted the offer from Upsala. In the course of the discussion so many unreliable articles concerning Swedenborg and his works appeared that Professor Retzius proposed that I should write some articles on Swedenborg's biography. Accordingly I published three illustrated articles in the chief Swedish daily, *Aftonbladet*. The articles have been received with much satisfaction, and it has been proposed that they be published as a pamphlet.

The Swedenborg Museum opened.

During the summer of 1907 the authorities at the Northern Museum became interested in a proposal to form a Swedenborg Museum, a special collection of Swedenborgiana to illustrate Swedenborg's biography. During the winter the subject has been thoroughly investigated and the Museum will be opened by a special Swedenborg Exposition. Portraits of Swedenborg, of his parents, relations and contemporaries have been collected from various parts of Sweden and arranged in a room together with a number of objects once owned by Swedenborg, including also many manuscripts, printed works, etc. A detailed catalogue has also been prepared and the Exposition will be opened to the public in a few days. As a result of the preparations for this Exposition and the widespread publicity given to it several new Swedenborgiana have turned up. I shall, however, not refer to them in detail, as they are all noticed in the Catalogue.

May the Association have a useful meeting in this its decennial year, is the wish of one who would gladly be present in person as he will be in spirit.

Respectfully submitted,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, May 11, 1908.

Report of the Work in Sweden, October, 1908.

(Reprinted from *The New Philosophy*, January, 1909.)

Rev. Frank Sewall, M. A., D. D., President of the Swedenborg Scientific Association:

In a report to the Association, dated May 11th, an account was given of the work on Swedenborgiana in progress here. At the time of writing several plans were on the point of being executed which have since then been duly carried out, and in so successful a manner as far to exceed the expectations of those who had closely observed the development of interest in Swedenborg and his works. I shall now proceed to give some account of the events referred to, as well as of a visit to England and related matters.

The Deposition of Swedenborg's Remains in the Cathedral of Upsala.

In two open letters addressed to you, for publication in America, on the reception of Swedenborg's remains at Carlskrona and Upsala, I gave a brief account of the memorable proceedings which have caused such a popular revival of interest in Swedenborg's personality and works. It is a noble quality in a nation, and in humanity, the honoring of the great dead. Youth and the multitude will not clearly distinguish between a great man's personality and the principles for which he stood, but nevertheless it is the mighty truth for which the hero fought which is really worshipped by those who worship the hero. The Swedish people recognized on May 19th the national proportions of Swedenborg's greatness and honored his memory by a solemn act, by depositing, with the most impressive ceremony, the

remains of their illustrious compatriot beside those of Rudbeck and Linnaeus in the Cathedral of Upsala. When that grand old Reformation hymn, "A Mighty Fortress is our God," resounded through the vaulted arches of Upsala's venerated fane, it seemed as if the mighty spirit of the Swedish race, which in a fateful hour saved the Reformation and guarded the rebirth of freedom, awoke once more, stirred by the memory of the mighty dead!

The recital of particulars here would occupy too much space. In the June and July issues of the English *New-Church Magazine* are printed two illustrated articles on the proceedings at Carlskrona and Upsala, and an illustrated memorial volume is in hand, to be published at London, by Dent & Co.

There were many beautiful wreaths in honor of Swedenborg at Upsala on May 19th, and among them was one representing the Association, placad at the head of the casket, with the Red, White and Blue in three bands at the lower part of the wreath, where was fastened a sheet of parchment with the inscription in red and black "In Memory of Emanuel Swedenborg from the Swedenborg Scientific Association and Admirers in North America. Upsala, $19^{19}/_{508}$."

At the present time plans are being made for a sarcophagus and decorations in the cathedral; their realization is to be signalized by an appropriate celebration, possibly in connection with the bicentenary celebration of the Scientific Society of Upsala in 1910, as Swedenborg was one of the founders of the Society. The plans are in charge of a committee in Upsala.

The Swedenborg Museum.

The "Swedenborg Exhibition" referred to in my last report was duly opened in a special room in the Northern Museum on May 17th.[1] A detailed catalogue of all the objects on exhibition had been prepared, referring to several newly discovered Swedenborgiana. On the walls of the room hung portraits of Swedenborg, and of his parents, relatives and contemporaries, while in a number of cases at the sides of the room were placed on exhibition a number of his scientific and theological manuscripts and printed works, together with various historical and bibliographical volumes, etc. Swedenborg's organ, and the inlaid marble table presented by him to the College of Mines were also in evidence, as well as several other curiosities.

[1] The Exhibition was closed on July 20th. — A. H. S.

A Visit to England.

Having been invited by the Committee of the Swedenborg Society of London to address the Society's Annual Meeting and to confer with the Committee, I travelled to England early in June and was present at the Annual Meeting on June 9th, delivering an address on "Revived Interest in Swedenborg's Scientific Works and Swedenborgiana" (*Morning Light*, June 20). A great interest was shown in the work in Sweden and in recent occurrences at Carlskrona and Upsala, and in several meetings of the Society's committee, when I was invited to be present, plans for co-operation with the Association and for the support and extension of the work were thoroughly considered. The co-operation of this powerful Society will greatly increase the scope of the work here and ensure the accomplishment of the various projects in hand.

As the representative of the Association I was received by the Swedenborg Society and also by the New Church Conference, which met at Southport, with every courtesy and hospitality. I had the pleasure of addressing the Conference and allied meetings. The unique legal and business capacity of the English was always a most striking feature of the meetings. Observing the conduct of their meetings with the eyes of a foreigner I was continually impressed by the order and dispatch with which the Chair and Secretary directed the proceedings, there being much less work on the floor than in similar meetings which I have attended in America and Sweden.

The New Edition of the Scientific Works.

Thanks to the recent action of the London Swedenborg Society in subscribing for 125 sets of the new edition, a large number having previously been subscribed in America, it now seems certain that the *Opera Philosophica et Mineralia* will be included in the series as Vols. IV. to VI. Unfortunately, only 500 copies of Vols. I. to. III. have been printed, about 400 of which are already disposed of, so that the edition will soon be out of print. However, if plates are made now, a second edition, including those pages the type of which has been distributed, can easily be printed later on. I am now busy at Upsala part of the time collecting material for the Introduction concerning the miscellaneous contents of Vol. III., which contains much of interest in connection with the early history of the Scientific Society of Upsala.

August Strindberg's References to Swedenborg in "A Blue Book."

The flood of newspaper articles on Swedenborg ceased last May, but the best known dramatist and author of Sweden, August Strindberg, continues to excite the interest of the public by extending his "Blue Book", which he began publishing last year, the work being dedicated to Swedenborg, the leader and teacher, in memory of the home-coming of his remains after a century's absence in foreign soil. The appearance of new productions by Strindberg always causes a great excitement in literary circles, for his observations concerning facts and persons are so direct and oft-times accompanied by such brilliant sallies that many are dazzled and some hurt. The publication of the Blue Book has proceeded as follows: First came Part I., which was succeeded by a separately published Appendix. Then came Part II., and this week Part III. has left the press, making a grand total of 1,071 pages, octavo, treating of everything under the sun, and presenting in fact the "Weltanschauung" of this brilliant but erratic genius. He repeatedly confesses his conversion to the religious view; accepts Swedenborg, but also theosophy; fiercely criticizes modern philosophy and science, both their spirit and results, not only zoology, botany and evolution, but also physics, astronomy, chemistry and the decipherings of the Egyptologist and Assyriologist, etc. Every few pages appears Swedenborg's name accompanied by extracts and discussions; apparently the theological writings only are referred to. Love and marriage are leading themes throughout the work. Strindberg also accepts the doctrine of the transmigration of souls. Some of the New Church people here were rather enthusiastic when the first volume appeared, but their enthusiasm has greatly diminished. On reading the Blue Book it appears that Strindberg's conversion is genuine and permanent; the work shows a man who is in earnest and searching for the truth, but many positions are taken which agree neither with Swedenborg's theological or scientific works, nor with sound science and history. And yet "A Blue Book" is undoubtedly the production of a genius; in the midst of much slag there lies some of the true metal.

Investigations and Addresses.

When in England last June and July I made as thorough investigations for new Swedenborgiana as time would permit, chiefly at London and Manchester. Swedenborg's notes in a set of the *Arcana*

Cælestia in the Library of the Argyle Square Society, London, have been reported in the *New-Church Magazine* for September. The results of an examination of the Archives of the Swedish Church at London will be printed in due course. I found several new references concerning Swedenborg, beginning with the year 1710, the date of his first visit to England, up to a period long after his death. At Paris I made a preliminary search for a letter reported to be in the Archives of the Astronomical Observatory. At Upsala I have heard of some new particulars concerning Swedenborg's biography, all of which will be recorded in *The New Philosophy* and elsewhere.

On the initiative of Professor Karl Reinhold Geijer, who occupies the chair of Theoretical Philosophy at Upsala, two addresses by me on Descartes and Swedenborg were announced in the list of addresses to be delivered at the Third International Congress of Philosophy, held at Heidelberg from August 31st to September 5th. The addresses were duly delivered at Heidelberg on September 3d and will appear in the Report of the Congress. The first address was on "Relics of Descartes' visit to Sweden, especially a newly discovered portrait by David Beck;" the second was on "The Cartesian Controversy at Upsala, 1663-1689, and its connection with Swedenborg's nebular hypothesis." An address on "Swedenborg as a physiological psychologist" was delivered on October 13th before the Psychological Society of Upsala, of which Professor Geijer is President. A very interesting discussion by Professors in the Faculty of Medicine and others followed the address, the chief point being the evidence upon which Swedenborg apparently based his theory of brain localizations, the general opinion being in favor of pathological instead of experimental evidence. I may add that this is the first time to my knowledge that an address has been delivered in Upsala concerning any part of Swedenborg's scientific works,[1] although they have naturally been the subject of considerable discussion during the last few years. My studies in philosophy at the University have brought me into touch with several men who have furnished much useful information in connection with the history of philosophy at Swedenborg's Alma Mater. It is clear enough that the whole question of the historical connection of Swedenborg's early work in science and philosophy with conditions at Upsala should be thoroughly investigated. His early scientific work cannot be clearly understood without an understanding of the conditions which prevailed at Upsala and Stockholm

[1] When writing the above I had not heard of Dean Ramström's address on behalf of the Medical Faculty on Swedenborg's works on the brain, delivered at the promotion exercises at Upsala in May. — A. H. S.

during the period 1650-1750. The philosophical atmosphere was largely Cartesian, and it is clear enough to any student of Swedenborg's cosmology who is versed in the history of philosophy that Swedenborg's point of departure was in several respects Cartesian; a reference to the subject by Swedenborg's intimate friend, von Höpken, also shows that this was the opinion of Swedenborg's contemporaries. The investigation of the origin and development of Swedenborg's earlier scientific works becomes much clearer in view of the Cartesian Controversy which raged at Upsala during the latter half of the seventeenth century.

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, Oct. 16, 1908.

A Report of the Proceedings in Sweden. Annual Report for 1908-1909.

(Reprinted from *The New Philosophy*, July, 1909.)

TO THE SWEDENBORG SCIENTIFIC ASSOCIATION:

Since reporting to the Association a year ago, two reports, dated Oct. 16th and March 31st, have been sent to the President. I have also reported several times to the Association's Board of Directors and to the Committee of the London Swedenborg Society. In view of what has been printed in *The New Philosophy* and elsewhere concerning the progress of events during the year, the present report will be very much condensed, but I think it will be useful to refer, however briefly, to all that has occurred, so that a general view may be more easily obtained.

Interest in Swedenborg.

Partly as the results of efforts here, but largely due to the pent up energy of a hundred years of labor by earnest students in Europe and America, great strides have been made during recent years in the investigation and publication of Swedenborgiana and in doing justice to Swedenborg's memory. Those who are well informed in

regard to the history of events here know that for many decades much labor and treasure have been devoted to the publication of Swedenborgiana and to the investigation and study of the matter printed. But there were not many who realized how important that work had been. At the present time there is a great revival of interest in the scientific and philosophical works of Swedenborg and in all that relates to his life and works. Much interest has been shown, not only in North America, but also in Europe, especially in Sweden, England and Germany. In Sweden the current of events has led to several remarkable public demonstrations at Stockholm and Upsala. Indeed, during the past year such an expansion of activity has occurred that it is now hardly possible to follow all that is going on. There are now three Swedenborg Committees at Stockholm and Upsala, and Swedenborg's significance as a scientist and a great Swede has recently been debated in both Chambers of the Swedish Parliament. Granted that much of what is now being done to honor Swedenborg's memory is of an ephemeral nature, it cannot be denied that some excellent and permanent results have also been produced. One good result is that the new edition of the scientific works has been greatly extended. But before describing the extensions it will be convenient to refer to the results of

A Visit to England during June and July, 1908.

The publication of the first and second volumes of the new edition of the scientific works and the removal of Swedenborg's remains from London to Upsala aroused great interest in England. Having been invited by the Committee of the London Swedenborg Society to address the Society's Annual Meeting and to confer with the Committee, I travelled to England last June and attended the annual meeting of the Swedenborg Society and of the New Church Conference. The liveliest interest was shown in proceedings in Sweden and at several meetings of the Society's Committee the work here was thoroughly discussed and the following decisions made:

1. The Society subscribed for 125 sets of the Stockholm edition of the scientific works.

2. It was decided to co-operate with the General Convention and the Academy of the New Church in phototyping Swedenborg's theological works.

3. Co-operation with Sweden and America in regard to the proper disposition of Swedenborg's remains was found desirable.

4. A memorial volume on Swedenborg to be prepared by me is to be published at London; and

5. An English translation of the Swedish matter in Vol. I. of the new edition is to be furnished the Society for their English edition of the scientific works.

6. A report to the Society on the MSS. of Swedenborg and miscellaneous Swedenborgiana is to be prepared by me, so as to furnish a comprehensive plan for the reproduction of unpublished matter in the "Swedenborg Archives" and in other forms.

7. The Society will co-operate with the societies in America in supporting the mission here.

During the year good progress has been made in agreement with the plan as outlined above. Having returned to Sweden I secured the consent of Professor Gustaf Retzius, and, later, that of the Board of Directors of the Association to the plan. There can be no doubt that the co-operation of the Swedenborg Society will greatly increase the scope of the work here and ensure the accomplishment of the various projects in hand.

While in England I made some investigations for new Swedenborgiana and published the results in the *New-Church Magazine*. The address to the Swedenborg Society was on "Revived Interest in Swedenborg's Scientific Works and Swedenborgiana." Later, in September, I addressed the Historical Section of the Third International Congress of Philosophy at Heidelberg, on "Descartes and Swedenborg;" and in October the Physiological Society of Upsala on "Swedenborg's Physiological Psychology."

The New Edition of the Scientific Works and Miscellaneous Publications.

The London Swedenborg Society having subscribed for 125 sets of the new edition, and a large number of subscriptions having previously been received from America, the *Opera Philosophica et Mineralia* will be included in the edition. Of the edition of 500 copies of Vols. I. to III., about 400 have been disposed of. It has been decided that some of the matter which was first intended for Vol. III., shall be reserved for a new Vol. IV., to include the work *On the Infinite*. Professor Nils Dunér, the Perpetual Secretary of the Royal Scientific Society of Upsala, is preparing the Introduction to Vol. III., and the Professor of Chemistry, Peter Klason, of the Technical High School, of Stockholm, has drafted the Introduction to Vol. V., "*The Principia*."

A portion of the *Daedalus Hyperboreus*, already printed for Vol. III., has been discarded and a *facsimile* reproduction by photography will be included in the volume in its place. As the work is going through the press, the Scientific Society of Upsala will also print an edition of the *Daedalus* on fine paper from the same stone plates. This special edition will be issued in 1910 as one of the festival publications of the Society in connection with its bicentenary celebration, — of which more below.

As for the remaining publications in hand:

1. The *Festivus Applausus Caroli XII.*, of which an advance edition of 30 copies was published last spring, has not been completed because some details of the title-page have not yet been decided upon.

2. The second and third sections of *Emanuel Swedenborg as a Scientist* will soon be on the market. Of the third section a few copies have been published.

3. Part I. of the Association's series of *Scientific and Philosophical Treatises* by Emanuel Swedenborg appeared during 1908, and some of the remaining treatises necessary to complete Part II. have been translated.

4. The remaining portion of the new edition of the *Worship and Love of God*, in press at Boston, has now been prepared for the printer, so that the printing will now be completed. An index is also being prepared.

5. A new biography of Swedenborg, *Grunddragen af Swedenborg's Lif* (*The Chief Features of Swedenborg's Life*), embodying some of the results of recent investigation, was published at Stockholm last January.

Great progress has been made with the *Index Biblicus*. Two of the three large folio volumes are printed and the third will be finished during the summer. The total number of pages is greater than in the case of the phototyped *Diarium Spirituale*.

Additional publications will be referred to below.

The Swedenborg Museum.

The Swedenborg Museum was opened by a special exhibition from May 17th to July 20th, 1908, and a detailed printed catalogue was on sale. The collections of Swedenborgiana in the exhibition aroused great interest and the museum is now to be made permanent, the collections to be on view in one of the central tower rooms of the Northern Museum. The exhibits last year consisted of portraits

of Swedenborg, and of his parents, relatives and contemporaries; and objects once owned by Swedenborg, including also many manuscripts, printed works, etc. As a result of the exhibition some hitherto unknown objects have been found.

Swedenborgiana for Swedish Libraries.

When in London I secured some valuable books for the Royal Library, and I desire to recommend to authors and publishers that they send all matter relating to Swedenborg or the New Church to the central Swedish libraries at Stockholm, Upsala, Lund and Gottenburg, but especially to the great libraries at Stockholm and Upsala, that is, to the Royal Library, the Library of the Royal Swedish Academy of Sciences, and Upsala University Library. At the recent auction of the valuable Swedenborgiana in the Hammer Library, the rarities were distributed among the libraries named, with the exception of the University Library of Lund. The manuscripts and rarest editions went to the Stockholm libraries. The Swedenborgiana of the Hammer Library will be described in a special article.

Swedenborg honored at Stockholm and Upsala.

Among the means by which interest in Swedenborg's personality and works has been excited in Sweden may be mentioned a large work, entitled *A Blue Book*, by August Strindberg, the greatest of living Swedish dramatists. The work is dedicated to Swedenborg in memory of his home coming to Sweden. Another book which has done good service is Lieutenant's Ernst Liljedahl's *Swedenborg, His Life and World-View.* The newspapers have also contained numerous articles concerning Swedenborg, in connection with the removal of his remains from England to Sweden.

After the remains had been conveyed from Dartmouth to Carlskrona on the Swedish cruiser "Fylgia," they were, on May 19th, deposited in the Cathedral of Upsala with the most impressive ceremonies. The Archbishop of Sweden, in an address, referred to Swedenborg's great qualities of mind and heart, which make his memory an inspiration for the Swedish people. I have been informed by the authorities at Upsala who had charge of the proceedings on May 19th that the remarkable demonstration was a spontaneous expression on the part of the numerous corporations which partook in the ceremonies.

The Rector of the University of Upsala, Professor Henrik Schück, is the chairman of a Swedenborg Committee in charge of the sarcophagus which is to contain Swedenborg's remains and be a sign of the honor in which Swedenborg's memory is held by his countrymen. The professors of anatomy were appointed a committee by the Scientific Society to investigate and report upon Swedenborg's remains. The results of the committee's investigations have been reported to the Scientific Society, and Professors Edvard Clason and J. W. Hultkrantz have delivered five lectures on the subject before the Society and the medical societies of Upsala and Stockholm. Professor Hultkrantz has also modelled a fine new bust of Swedenborg on the basis of the evidence secured. It has been decided by the Society to print a work prepared by the committee, on Swedenborg's remains and person and on the portraits of Swedenborg, in English in the *Acta* of the Society, and also in a Swedish edition. I have been co-operating with the committee since they began their labors. The works will be printed in 1910 in connection with the bicentenary celebration of the Society, and I am now preparing the English edition to be published in the *Acta*. Swedenborg's memory will be especially honored in connection with the bicentenary celebration, when the sarcophagus will probably be finished. Swedenborg was very active in the early development of the Society, which was founded in November, 1710, and he was also the editor of what may be regarded as their earliest proceedings, the *Daedalus Hyperboreus*, which is also the first Swedish scientific magazine.

As a result of the increased interest in Swedenborg a motion was introduced last January by Lector J. F. Nyström, in the First Chamber of the Swedish Parliament, that the sum of 10,000 kronor be appropriated for a Swedenborg sarcophagus. In spite of vigorous opposition on the part of several influential members, who succeeded in having the motion adversely reported from the Committee on Finance, — though a favorable minority report was also presented — and in spite of opposition on the floor in both Chambers and also in one of the Stockholm newspapers, the motion was carried on the 15th of April by a joint vote of both Chambers, after it had previously been carried in the First Chamber, but defeated in the Second by a small majority. A few days before the final vote I sent to all the members of Parliament a pamphlet on the Scientist Swedenborg, quoting the opinions of eminent Swedish scientists. The result of the final vote is a complicated one; an account of the history of the motion and of the debates in both Chambers will be

published in due course. The main result is that the memory of Swedenborg has been greatly honored by his countrymen, and that the opinion of the public is now largely favorable to Swedenborg, his works being now sold in much greater numbers than before.

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, April, 22, 1909.

The Work in Sweden. Annual Report for 1909-1910.

(Reprinted from *The New Philosophy*, July, 1910.)

TO THE SWEDENBORG SCIENTIFIC ASSOCIATION:

Since reporting to the Association a year ago (*New Philosophy*, 1909, pp. 92-98), the investigation and publication of Swedenborgiana in Sweden has made much progress that I am able to report the following results with regard to the Stockholm edition of Swedenborg's scientific works under publication by the Royal Swedish Academy of Sciences. Vol. III. containing Swedenborg's "Prodromus Principiorum Rerum Naturalium" and the other works published at Amsterdam in 1721, together with a considerable number of treatises hitherto unpublished, is about to leave the press. The text of this volume occupies more pages than was the case in the preceding volumes, and the arrangement of the works in Vols. III. and IV. has again been altered, owing to the inclusion in the series of much new material, the publication of which was not originally contemplated. In order to explain clearly the nature of the alterations and examinations referred to, it will be best to review briefly the history of the edition.

As originally planned the edition was to include a number of Swedenborg's earliest works of the period 1716-1722. It was not intended to include the PRINCIPIA and the works on IRON and COPPER, but the works on the BRAIN were to follow immediately after the early volumes. But the plan has been altered from time to time until now the number of volumes planned has been trebled. Without referring to the details I shall only mention the decision to include the three volumes of the OPERA PHILOSOPHICA ET MINERALIA and Swedenborg's anatomical and physiological works, and

shall pass at once to a brief description of the changes introduced in Vols. I. to IV. These volumes will contain nearly everything Swedenborg produced before 1734, that is, practically all of his original scientific works prior to the PRINCIPIA. Most of the earliest works on geology and cosmology have been published in Vols. I. and II., and Vol. III. contains the PRODROMUS PRINCIPIORUM and numerous smaller works. As for Vol. IV., it will contain the *facsimile* reproduction of the DÆDALUS HYPERBOREUS, one-half of which has been photographed, and a collection of miscellaneous papers and treatises, many of which are now accessible only in Vol. I. of the Photolithographs. During the past year I have been busy with these two volumes and also with the Introduction to Vol. III., which has necessitated much laborious investigation concerning "The Sources and Development of Swedenborg's Early Philosophy of Nature," the subject of the Introduction. Personally it has been a source of the greatest delight to me to see how Swedenborg's preparation for his future mission, from 1710 onwards, proceeded during the period prior to the "Principia," and especially from the time of his university studies until 1722, when he concluded his early investigations in physics, astronomy, chemistry and geology.

From the above statement with regard to the investigation and printing of the scientific works it will be seen that I have been devoting my best energies to the publication of Swedenborg's works, according to the message received from the Association last year, although I have also, as during the previous year, endeavored to do everything to fulfil our agreement with the London Swedenborg Society, involving the performance of certain uses which indeed are in the interest of the Association's central purpose, although to some extent of a temporary nature. I have, however, felt that it is of no small importance to strike while the iron's hot with regard to the subsidiary uses referred to, since their accomplishment needs attention now if they are to be attended to at all. I shall now refer briefly to the subsidiary uses with which progress has been made during the past year.

The three volumes of the INDEX BIBLICUS are now phototyped, and I am at work upon the titles and prefaces. It is clear that the phototyping of Swedenborg's unreproduced theological works should be continued, by the completion of the volume of miscellaneous theological works begun in 1903, a work in which the London Society is willing to co-operate with the bodies of the New Church in America. The original MSS. of the ARCANA CŒLESTIA and APOCALYPSIS EXPLICATA should also be phototyped.

The Memorial Volume on Swedenborg has been largely drafted, but its publication will be postponed until after the celebrations this year of the centenary of the Swedenborg Society of London, and the bi-centenary of the Royal Scientific Society of Upsala. In preparation for these events I have spent part of my time in planning and printing a number of festival publications, including reproductions of a number of Swedenborg's earliest scientific works. Progress hats also been made with the latter portion of Part II. of the Association's series of SCIENTIFIC AND PHILOSOPHICAL TREATISES, by Emanuel Swedenborg, and with the new edition of the WORSHIP AND LOVE OF GOD, and I have felt thankful, on account of much study during recent years of Swedenborg's philosophical and anatomical works by myself and Professor O. M. Ramström, of Upsala, that the publication of these works has been delayed, for it will now be possible to include certain features which will greatly increase the value of these new editions.

Before referring to the truly wonderful results obtained by the Professors of Anatomy at Upsala, Prof. J. W. Hultkrantz and Prof. O. M. Ramström, it will be best briefly to describe the course of events during the past year in connection with the present movement in Swedenborg's native land and in England, to honor his memory and to do justice to his gigantic and many-sided labors in science, philosophy and theology. The International Swedenborg Congress which is to meet at London early in July under the auspices of the Swedenborg Society will see assembled from various centres in Europe and America many students of Swedenborg's works representing all shades of opinion. Sweden will send to London, among other representatives, a number of scientists from Stockholm and Upsala who will lay before the Congress the results of the recent investigations of Swedenborg's earlier series of works which have been carried on at the Swedish centres of learning. Is is difficult for anyone not on the spot and intimately acquainted with the conditions obtaining here, to realize the remarkable character and extent of the movement which has developed in Sweden since 1902, and which has accomplished so much in reviving the study of Swedenborg's life and works. The Swedenborg Committees at Stockholm and Upsala are investigating and publishing Swedenborg's scientific works; arranging for the unveiling of the Swedenborg sarcophagus in Upsala cathedral in connection with the celebration next November of the bi-centenary of the Royal Scientific Society, of which Swedenborg was a founder and most active member; describing in detail Swedenborg's remains, including a full account of all

information concerning his person and of portraits of Swedenborg, while the Northern Museum at Stockholm is continuing the collecting of all objects which throw light upon the life and works of Swedenborg and his nearest relatives. The Swedenborg Committee at Upsala in charge of the sarcophagus preparations has reported in favor of a handsome stone casket of red granite ornamented with a bronze medallion and an inscription: "EMANUEL SWEDENBORG, VATES SUECORUM."

The work of Prof. J. W. Hultkrantz, on Swedenborg's remains, with an appendix by the present writer on portraits of Swedenborg, will be published in the official "Acts" of the Royal Scientific Society of Upsala, and will contain a full historical discussion, including several new documents and a number of interesting illustrations. In addition to the five lectures previously delivered before the medical societies at Stockholm and Upsala Prof. Hultkrantz has recently delivered another lecture on his results before the Society "Idun" at Stockholm.

Prof. O. M. Ramström, who, in 1908, as Dean of the Faculty of Medicine at Upsala delivered the address to the graduates from that Faculty on "Swedenborg as a natural scientist and especially as a cerebral anatomist," has continued his researches and followed out in great detail the historical origins and development of Swedenborg's doctrine concerning the brain and nervous system, and produced a long paper on the subject which greatly modifies and extends previous conceptions, and which will be laid before the Swedenborg Congress in London next July.

As the representative of the Association I again visited London last June as the guest of the Swedenborg Society, delivering an address at the annual meeting and also attending the meetings of the New Church Conference at Kearsley. As on my former visit, the liveliest interest was shown in the work in Sweden, and all plans were fully discussed with the Committee of the London Society, although no new work beyond that already referred to in my last annual report to the Association was undertaken.

Not until this year has the full story of Swedenborg's later years, especially his connection with the great controversy in the Gothenburg Consistory, been made accessible to New Church students. The important work of Mr. Wilhelm Berg of Gothenburg, on the History of the Gothenburg Diocese during the 18th century, so aroused my interest that I made three journeys to Gothenburg last autumn in order to investigate the original documents, the results being recorded in NEW CHURCH LIFE for January, and the complete

analysis of all the evidence concerning this most important of religious trials since the great councils of the early Christian Church is now appearing in the LIFE from the pen of the Rev. C. Th. Odhner. This biographical material is beyond doubt the most important accession to our stores of knowledge which has come to light during recent years, and I take great pleasure in here acknowledging the source of the reference which first drew my attention to Berg's work, namely, Professor Hjalmar Holmquist's contribution in the Swedish periodical KYRKLIG TIDSKRIFT. The contributions of Professor Holmquist and of other Swedish authors who have recently written concerning Swedenborg have been noticed in the April issue of the NEW CHURCH QUARTERLY.

Beyond calling attention to the various articles in New Church periodicals in which the results of researches on Swedenborgiana in Sweden have been described, there is nothing further to report concerning my activities as the representative of the Association abroad, except the reception from President Sewall of the contributions from members and friends of the Association in payment of the wreath which was laid at the head of Swedenborg's casket in Upsala Cathedral on May 19th, 1908, on behalf of the Association and admirers of Swedenborg in North America. The numerous fading wreaths, many of them from England, still surround the silvery covered casket in the "Swedenborg Chapel," and recall to mind when the fading light of evening fills with mystic charm the vaults of the grand old cathedral that day when Svea received again her exiled son.

Hoping that the Association will have a successful meeting and that its important uses will continue to prosper, I remain,

Yours respectfully,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences, Stockholm, April 30th, 1910.

Annual Report of Work on Swedenborgiana in Sweden, 1910-1911.

(Reprinted from the *Report* of the Swedenborg Society, London, 1911.)

According to a custom established ten years ago the undersigned has annually reported to the Swedenborg Scientific Association pro-

gress made in transcribing and publishing Swedenborgiana. Occasionally, as the course of events in Sweden seemed to indicate that additional or supplementary reports and communications were advisable, they have been written and sometimes published in *The New Philosophy* and other periodicals. Since the more thorough organization of the work in Sweden during the past five years it has developed to such an extent that if the present plans are carried out many of the most sanguine hopes of New Church scholars will be realized in our own times and the foundations laid for a great development of our literature. Indeed, much has already been accomplished, as reported in "A preliminary report of the work on Swedenborgiana in Sweden up to March 1st, 1911," recently forwarded to the London Swedenborg Society, the New York Swedenborg Society, the General Convention of the New Jerusalem, the Academy of the New Church, the Swedenborg Scientific Association, and the Rotch Trustees, all of which bodies are concerned in the work in Sweden, according to the general plans endorsed by a meeting of American representatives with the Swedenborg Society's Committee, London, July 11th, 1910. According to the minutes of that meeting it was decided, "That Mr. Stroh have copies of his report typewritten in Sweden and sent to all the societies contributing to the phototyping fund." As in the case of the "preliminary report" the present annual report is therefore sent to all the societies mentioned above.

Since the date of the "preliminary report" the work of editing Swedenborg has made decided progress in the Royal Swedish Academy of Sciences at Stockholm, and after delivering on behalf of the London Swedenborg Society an address on "Swedenborg's Position in the History of Philosophy" before the historical section of the fourth International Congress of Philosophy, at Bologna, on April 10th, I met the Society's Committee in London on May 5th, when the work at Stockholm was thoroughly discussed and many important decisions arrived at. The phototyping of a number of Swedenborg's manuscripts was authorized and it was decided that regular monthly reports of progress made in Sweden be sent to the societies concerned in the work. But it will be most convenient for the reader of this report to consider the details of the work as presented below according to the three main lines undertaken ever since operations were begun in Sweden in 1902, namely, 1. The phototyping of Swedenborg's theological works, 2. the printing of Swedenborg's scientific works, 3. the investigation of Swedenborgiana.

The Phototyping of Swedenborg's Theological Works.

At the memorable meeting of representatives in London, July 11th, 1910, it was decided "That the work of phototyping the theological MSS. of Swedenborg be proceeded with as circumstances may permit," and "That the Adversaria be proceeded with after the smaller theological works, or concurrently." The immediate photo typing of the *Adversaria* having been strongly urged and authorized by Mr. John Pitcairn, the representative of the Academy of the New Church, that work was taken in hand, but no other authorization having been received no other phototyping was undertaken. The Swedenborg Society has, however, now authorized the phototyping of the *Adversaria*, of the volume of miscellaneous theological MSS., and of Swedenborg's theological correspondence with Swedenborg's other letters in Part 11. of *Swedenborgiana*. The phototyping of the *Adversaria* has made such progress since last August, that several hundred pages of the first two of the four volumes are finished and the other work just authorized will be begun upon my return to Stockholm. According to the plan sanctioned by the meeting of representatives last summer the following works will be phototyped later on in the order in which they are placed: *Arcana Coelestia* with *Index; Apocalypse Explained* first draft; Index to *Apocalypse Revealed.*

At the request of the Swedenborg Society I am also preparing an estimate of the time and expense necessary to complete all of the phototyping. — In order that interested students may have access to the MSS. as they are phototyped, sets of the sheets are being sent to the three centres where New Church scholars can most readily reach them, namely, to the Swedenborg Society, London, to the Academy of the New Church, Bryn Athyn, Pennsylvania, and to the New Church Theological School, Cambridge, Massachusetts.

The Printing of Swedenborg's Scientific Works.

At the meeting of the Royal Swedish Academy of Sciences on March 8th, Vol. 3. of the new edition of Swedenborg's scientific texts, with introduction and notes by the editor, was laid upon the table by Professor Gustaf Retzius, President of the Academy's Swedenborg Committee. He also reported the Committee's plans for the new edition and referred to the remarkable proceedings in honor of Swedenborg which have distinguished the past year, in which con-

nection he laid upon the table copies of the ten festival publications issued during the past year. The handsome copy of the *Transactions* of the International Swedenborg Congress, one of 25 copies of an *edition de luxe*, was also on view.

The Swedenborg publications of the Academy of Sciences and the celebrations at Upsala last November were also referred to in detail in the annual report of the Academy on March 31st. His Majesty King Gustaf V., the Royal Protector of the Academy, was present on the occasion.

According to the provisional plans of the Stockholm Committee, determined upon on May 31st, 1910, and April 1st, 1911, the following volumes will appear in due course.

Vol. 1. *Geologica et Epistolae* with an *Appendix*. Published in 1907 with an Introduction by Professor A. G. Nathorst.

Vol. 2. *Cosmologica*. Published in 1908 with an Introduction by Professor S. Arrhenius.

Vol. 3. *Miscellanea de Rebus Naturalibus*. Published in 1911 with an Introduction by the editor.

Vol. 4. *Daedalus Hyperboreus et varia ex annis 1716-1722*. With Introduction by Professor Nils Dunér.

Vol. 5. *Varia Physica et Psychologica*. With Introduction by the editor.

Vol. 6. *Principia Rerum Naturalium*. With Introduction by Professor Peter Klason.

Vol. 7. *De Ferro*.

Vol. 8. *De Cupro*.

Vol. 9. *Oeconomia Regni Animalis*.

Vol. 10. *De Cerebro*.

Vol. 11. *De Morbis Cerebri*.

Vol. 12. *Regnum Animale cum indicibus et notis historicis criticisque totius seriei*.

Vols. 1 to 3 of the edition have appeared; Vols. 4 and 5 have been authorized by the Committee and they are about one half printed or set up. It now seems probable that since such excellent results have been obtained with the photolithographic reproduction of the *Daedalus* in Vol. 4. the same method will be employed in reproducing the *Opera Philosophica et Mineralia* in Vols. 7 to 9. Introductions for the anatomical works will probably be furnished, among other writers, by Professors O. M. Ramström and S. E. Henschen.

Now that the work in Sweden has again retured to its usual course after the extraordinary proceedings of the last few years the

editor of the scientific series hopes to finish without further delay the translations of various scientific works undertaken for the Swedenborg Scientific Association, for the Rotch Trustees and for the Swedenborg Society. Some progress with these translations has been made during the past year.

The Investigation of Swedenborgiana.

No better way of taking a general survey of progress made in the investigation of Swedenborgiana can be found than by examining the series of twelve festival publications issued during 1910 in celebration of the Swedenborg Society's Centenary and of the unveiling of Swedenborg's sarcophagus at Upsala. The twelve festival publications are the following:

1. *Opera Poetica Emanuelis Swedenborgii.* Published by the University of Upsala.

2. *Festivus Applausus in Caroli XII. adventum in Pomeraniam suam.* Published at Stockholm.

3. *Swedenborgiana 1.* Three new MSS. by Swedenborg phototyped by the New Church Publishing Society of Stockholm.

4. *An Abridged Chronological List of the works of Emanuel Swedenborg.* Published by the Royal Swedish Academy of Sciences in English and Swedish editions.

5. *Kungliga Vetenskaps Societetens i Upsala Tvåhundraårs Minne.* By Professor Nils Dunér, including the early minutes and statutes of the Upsala Society and the *facsimile* reproduction of *Daedalus Hyperboreus.* Published by the Royal Society of Sciences of Upsala.

6. *The Mortal Remains of Emanuel Swedenborg:* An account by J. Vilh. Hultkrantz. Published in *Nova Acta Regiae Societatis Scientiarum Upsaliensis.* Ser. IV. Vol. 2. n. 9, by the Royal Society of Sciences of Upsala.

7. *Till Kungl. Vetenskaps Societeten i Uppsala vid dess 200-årsjubileum.* Published by Upsala University. After the Preface by Rector Magnificus Schück follows a work by Professor O. M. Ramström on "Emanuel Swedenborg's Investigations in Natural Science, especially his statements concerning the functions of the Brain."

8. *Constitutiones Nationis Dalekarlo-Vestmannicae* MDCC *datae.* Published by the Vestmanland-Dala Nation of Upsala University and including notes in Swedish on Swedenborg's student days at Upsala 1699-1709.

9. *Emanuelis Swedenborgii Itineraria. Resebeskrifningar af Emanuel Swedenborg under åren 1710-1739.* Published by the Royal Swedish Academy of Sciences, Stockholm.

10. *Selectae Sententiae. Disputatio Emanuelis Swedenborgii.* Editio Phototypica. Published by the New Church Publishing Society of Stockholm.

11. *Camena Borea. Opusculum juvenile Emanuelis Swedenborgii.* Editio Phototypica. Published by the Swedenborg Society, British and Foreign, of London.

12. *En Swedenborgsreformation*, by Hr. Hjalmar Kylén, Stockholm, describing early New Church and "Swedenborgian" movements in Sweden.

The first four of the above mentioned festival publications were issued in celebration of the Swedenborg Society's Centenary and were laid upon the table of the International Swedenborg Congress, London, on July 5th, 1910. The remaining eight publications were issued on Nov. 19th, in celebration of the unveiling of Swedenborg's sarcophagus in Upsala Cathedral and of the bicentenary of the Royal Society of Sciences of Upsala.

Additional results from Swedish sources have been published in a number of periodicals during 1910 and in the early portions of the *Transactions* of the International Swedenborg Congress. A few weeks ago the long lost Minutes and other papers of the *Societas pro Fide et Charitate*, active at Stockholm 1797-1830, were presented to the Royal Swedish Academy of Sciences. The papers include not only complete minutes, but also a complete list of members, with dates, and a valuable collection of Swedish, English and American letters of great value for the early history of the New Church. It is very desirable that these papers be copied and made accessible for study and reference.

Such progress has been made in the listing of new Swedenborgiana discovered during the last ten years in Swedish and other archives that the "Abridged Chronological List" could be published at Stockholm last year, and I am about to lay before the Swedenborg Society "A Report on miscellaneous Swedenborgiana discovered since 1877." The report refers to 1. New works and memorials, 2. New letters written by, to or concerning Swedenborg, and 3. New miscellaneous documents. All materials brought to light since 1877, when the *Documents concerning Swedenborg* were published, are referred to. It is proposed (a) that all the originals of documents, both MS. and printed, be *phototyped* in the series *Swedenborgiana;* (b) that the original text of all the documents *be then printed* in a

single stout volume without other comment than information as to condition and locality of the material, and (c) that in printing *a* and *b full notes be kept* for a *new edition of Documents concerning Swedenborg*. The phototyping of Swedenborg's letters is already authorized and it is proposed that the copying of the new materials be begun so that the printing of the texts may be undertaken when the phototyping shall have been completed. For the third stage of the work, the editing of a new edition of the *Documents concerning Swedenborg*, preparations were made by the late Rev. James Hyde, and his labors will no doubt be of great value when the final editing is undertaken. Mr. Hyde's extensive preparations for a Life of Swedenborg are also without doubt of great importance and it is hoped that his work on Vol. III. of *The Brain* will be utilized in the final publication of the texts at Stockholm as well as of the English edition.

In connection with the editorial labors at Stockholm notes have been kept with a view to writing some time in the future when time permits a number of works on Swedenborg's life and writings, namely, *Outlines of Swedenborg's Life*, with a brief account of memorial proceedings in England and Sweden, 1908—1910; *Swedenborg's System of Science and Philosophy; The Life and Works of Emanuel Swedenborg, Scientist, Philosopher and Theologian; In Memoriam Emanuel Swedenborg*, to contain a full account of memorial proceedings and the development of the work in Sweden since 1902.

The present condition of the three main lines of work has now been described in some detail. All the other results obtained by efforts in Sweden, such as the removal of Swedenborg's remains; the discussions of Swedenborg and his works in the press and Swedish Parliament; the preparations for the International Swedenborg Congress by the embodiment in papers and festival publications of results obtained during the past decade, the imposing ceremonies connected with the unveiling of Swedenborg's sarcophagus, celebrated by a number of festival publications, — all these results, although of no small significance in their influence upon the public and in the advertisement and sale of Swedenborg's works, both scientific and theological, are nevertheless of secondary importance when compared with the three original lines of work. The public proceedings in honor of the great scientific investigator and patriot Swedenborg were undertaken not, as some have supposed, in order to advertise Swedenborg or arouse public opinion, but solely in order to do justice to the historic character of his labors. All these

imposing ceremonies will soon be nothing but an inspiring memory, save in so far as they have been enshrined and symbolized in the granite sarcophagus, and possibly in the medal which I have proposed shall be struck in commemoration of the removal of Swedenborg's remains, which might be followed by the erection of a bronze statue of Swedenborg in the Southern Quarter of Stockholm, in the Adolf Fredrik Square on Hornsgatan. The proposed site is only a stonesthrow removed from the place where Swedenborg resided for so many years, and faces the important thoroughfare along which he often passed on his way to the House of Nobles or other points in the city. At the opposite end of the Square Swedenborgsgatan begins. The erection of such a statue I have found after making enquiries at Stockholm need present no difficulties if the funds can be secured, and the unveiling of the monument in 1916, the licentenary of the date of *Daedalus Hyperboreus*, in which Swedenborg first began to publish his scientific works, might very suitably be followed by a meeting of representatives and visitors in the historic House of Nobles.

In concluding this report I desire to express my satisfaction with the present arrangements, which promise a great development of the work in Sweden, and I also wish to express my thanks to the societies which have so generously engaged me in these uses. May they be continued until all the manuscripts of Swedenborg have been reproduced and the foundations laid for the inevitable *Opera Omnia Emanuelis Swedenborgii*, is the earnest prayer of

Yours sincerely,

ALFRED H. STROH.

London, May 11th, 1911.

How to solve the Problem of a Complete Edition of Swedenborg's Works.

A Memorial addressed to the Printing Societies of the New Church and to Editors of Swedenborg's Texts.

(Reprinted from *Morning Light*, March 30 th, 1912.)

In two recent communications sent to *Morning Light*, the *New Church Messenger*, and the *New Church Life*, the phototyping of Swedenborg's theological manuscripts and the printing of his scientific

texts at Stockholm have been briefly described. Mention was also made of a plan to stereotype the texts now passing through the press in order to prepare for a future Complete Edition of Swedenborg's Works, *Opera Omnia Emanuelis Swedenborgii.*

The purpose of the present Memorial is to call the special attention of the New Church printing societies, whose charters and by-laws permit the publication of Swedenborg's original texts, whether scientific or theological, to the great importance of taking steps now to lay the foundations of the proposed edition. It is also desirable that editors, whose experience with Swedenborg's texts qualifies them to give an opinion on this subject, should give it their most earnest attention and endeavor to arouse interest in the manifold possibilities involved in the publication of a complete edition of Swedenborg's works. The realization of such a plan would have an incalculable influence upon the learning, scholarship, educational work and missionary operations of the New Church. If any Societies or individuals desire to correspond with the writer of this Memorial upon the questions here discussed, a letter will always reach him at the address given below.

The solution of the problem may be accomplished by working simultaneously in three different ways, namely:

1. By publishing in the first two volumes of the proposed *Opera Omnia*, Swedenborg's earliest productions, his poems, disputation, fables, etc., and all his letters, memorials and miscellaneous documents, many of which have been discovered and copied during recent years;

2. By stereotyping the numerous Swedish and Latin texts now appearing in the edition of the Royal Swedish Academy of Sciences, three volumes of which have been published, (paper matrices have fortunately been made of all the texts); and

3. By stereotyping in pages of similar size and general appearance as in the Stockholm edition all scientific and theological texts by Swedenborg, the publication of which may be undertaken in England, America, or Sweden.

The edition should be arranged in a general chronological order and based upon the manuscripts and original Swedish and Latin editions of Swedenborg, or upon the photolithographed or phototyped reproductions; copies by hand, later prints and translations being employed only when the originals have entirely disappeared, as for instance in the case of the *Coronis* and certain letters and documents.

A sure basis for nearly all texts by Swedenborg dating from the

period 1700-1716 will be found in the festival publications and in Vols. I. to III. of *Emanuel Swedenborg, Opera Quædam de Rebus Naturalibus*, recently published at Stockholm, and the great majority of the later scientific and philosophical texts will no doubt be included in the same series. Other texts belonging to the same general group are being published by the Swedenborg Scientific Association.

Turning now to the theological texts, we have first certain large preliminary works just phototyped, the *Adversaria*, or "Explanations of the Word" as Swedenborg called them, the *Index Biblicus*, and the *Memorabilia* or "Spiritual Diary". Work upon these texts is in progress in England and America and the publication of revised and more complete editions will no doubt become a practical question before long. And in the case of *Arcana Coelestia* and later works, of which the "Arcana" text is by far the most extensive, the Rev. J. K. Smyth, President of the General Convention, has recently proposed in the *Messenger* that the Rev. E. J. E. Schreck be sent to Sweden to edit that important series of eight volumes in connection with the first draft.

This proposal is one of unusual importance, for not only should the "Arcana" text be edited in connection with the extremely interesting and valuable information supplied by the first draft, but Mr. Schreck is also one of the most critical and thorough masters of Swedenborg's Latin we have thus far had in the New Church. He is moreover already well acquainted with the manuscript draft of the *Arcana*. (See his interesting articles in the *New-Church Review*, Oct., 1910., and Jan., 1911.) Practically all of the work might indeed be done with the aid of the phototyped reproduction now in hand, and the employment of Mr. Schreck in the work of editing the "Arcana" text cannot be too warmly recommended to the attention of the printing societies of the New Church. In a new edition of the "Arcana" text not only should the draft be employed, but also the copy of Tafel's reprint corrected by Dr. S. H. Worcester and preserved in the Library of the American Swedenborg Printing and Publishing Society in New York City. The materials supplied in Swedenborg's own hand in certain volumes of the original edition preserved in Harvard College Library and in the Library of the Argyle Square Society, London, should also be used. The great importance of the "Arcana" draft has at various times been emphasized; by the Rev. J. R. Boyle in a pamphlet, by myself in the pages of the *New Church Life*, and most recently by Mr. Schreck in the *New-Church Review*. It would be interesting to

thoroughly examine the English translation of the *Arcana*, Vol. II., which Swedenborg himself had printed in six parts, London, 1750, in order to ascertain whether there are any corrections of references, etc. The title of the extremely rare work was then rendered by: "Heavenly Secrets". Swedenborg also published in English translations of two others of the theological works, namely, of the *Brief Exposition* and of the *Answer to a Letter written to me by a Friend*, London, 1769. Thus the publication of translations of the Writtings was also inaugurated by Swedenborg himself.

In the hope that the present memorial may have the effect of arousing interest in the important question of new editions of Swedenborg's texts, and in the proposed *Opera Omnia*, it is respectfully submitted by the undersigned.

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, March 4th, 1912.

Annual Report of Work on Swedenborgiana in Sweden, 1911-1912.

The present annual report is in continuation of the previous one dated London, May 11th, 1911, and printed in the last *Report* of the Swedenborg Society, London, 1911. Everyone interested in the history of the work in Sweden will find all the previous reports published in *The New Philosophy* during the past ten years, but last year's report is contained only in the *Report* of the Swedenborg Society. Since inquiries have been made during the past year concerning the documentary history of the work in Sweden, I may here mention for the information of all the Societies and officials interested in this matter that the only consecutive and complete printed account of proceedings in Sweden since 1902 is contained in the sources referred to above. Beginning with last July monthly reports have been sent to all the societies concerned in the work in Sweden, and the order of treatment adopted in the monthly reports will also be followed below.

9—122793. *Stroh, A. H.*

The Phototyping of Swedenborg's Theological Works.

For information concerning the general conditions under which the phototyping has proceeded since the meeting of representatives in London, July 11th, 1910, see my last annual report. During the past year the first and second volumes of the *Adversaria* have been completed. The phototyping of the third and concluding volume is in progress. Some progress has also been made with the volume of *Miscellanea Theologica*, with Part II. of *Swedenborgiana*, and with Vol. I. of *Arcana Coelestia*. In addition to the manuscripts previously phototyped in the three folio volumes of the *Index Biblicus*, another special biblical index of names, places, etc., Codex 39, has been included in Vol. III.

The maximum appropriations by the united societies for the past two years, at the rate of £ 800 *per annum*, are now nearly exhausted, and the printing is even slightly in advance of the appropriations, an indication that still more rapid progress may be made. With present arrangements about one third more of the output is possible.

The Swedenborg Society has lately authorized the rebinding of certain of Swedenborg's MSS. which were left unbound over forty years ago when the photolithographing was finished. After these MSS. shall have been rebound the Librarian of the Royal Swedish Academy of Sciences, Dr. J. A. Bergstedt, will permit the taking apart of other MSS., including the *Arcana Coelestia*, the phototyping of which has been authorized by the Swedenborg Society and commenced.

In recent communications to *Morning Light*, the *New Church Messenger* and *New Church Life* detailed information has been furnished concerning the methods and processes employed in the phototyping work, and in the same connection the proposal of the Rev. J. K. Smyth, President of the General Convention, that the Rev. E. J. E. Schreck be employed upon a new edition of the *Arcana* has been heartily endorsed. There is no other single proposal to print Swedenborg's texts now before the Church involving so much progress with respect to the theological texts, except, indeed, the phototyping itself, and it is to be hoped that Mr. Schreck, one of the ablest editors the New Church has produced, will be employed in this field, either in Sweden, as Mr. Smyth has suggested, or elsewhere, since the phototyped edition of the *Arcana* is in hand. This project is also of great significance in connection with the proposed *Opera Omnia*, of which below.

The Printing of Swedenborg's Scientific Works.

For the general scope and plan of the new edition of Swedenborg's scientific texts, *Opera Quædam de Rebus Naturalibus*, of which three volumes have appeared at Stockholm, see my last annual report. During the year progress has been made with Vols. IV. to VI., and also with the various translations in hand for the Swedenborg Scientific Association, Rotch Trustees and Swedenborg Society. These translations are now so nearly completed that most of them will probably appear this year. They have been subjected to repeated revision by myself and others, and plans have been made to continue the work of translation by cooperating with Professor O. M. Ramström in preparing for press Vols. III. and IV. of *The Brain*. The Swedenborg Society has granted Professor Ramström and the undersigned the use of the materials left behind by Dr. R. L. Tafel and the Rev. James Hyde. The work will probably go forward rapidly when the Latin texts of *The Brain* will be prepared for press. The texts in question have been copied by the late Rev. P. B. Cabell and by Miss Greta Ekelöf. The MSS. copied by Mr. Cabell many years ago have been loaned by Urbana University to the Swedenborg Committee of the Royal Swedish Academy of Sciences through the good offices of the Rev. Frank Sewall, President of the Swedenborg Scientific Association. In this connection I may also mention that all of the MSS. of Swedenborg formerly copied for the Swedenborg Scientific Association, as reported in the *New Philosophy*, have now been forwarded to the Secretary of the Association, the Rev. Reginald W. Brown. It will not be necessary to repeat the list here, but all students of Swedenborg's texts will be interested to hear that these copies, together with a similar series of copies made for the Swedenborg Committee of the Royal Swedish Academy of Sciences, constitute by far the largest collection of copies by hand of Swedenborg's MSS. ever made. Next to the series of photolithographed and phototyped volumes these copies are the most important series of reproductions of Swedenborg's manuscripts in existence. It is be hoped, however, that all of these copies will gradually be printed either in Sweden or America in the *Opera Quædam* or *Opera Omnia*.

Recent proposals to stereotype all texts of the *Opera Quædam*, and to print all other texts to be issued in similar size so as to prepare for a complete edition of Swedenborg's texts, *Opera Omnia Emanuelis Swedenborgii*, have been received partly with great interest

and sympathy, partly with criticisms. It is very desirable that all New Church printing societies, editors, and interested persons, make it a point to communicate with the undersigned in reply to the memorial on this subject recently submitted to the printing societies and to several of our periodicals. By a division of labor and expense the plans may be realized. At any rate so great an opportunity should not be passed by unless no way of uniting sufficient resources in the execution of the work can be found. Since the publication of about three-fourths of all that Swedenborg produced is actually in hand or proposed the plan to secure a complete edition of the texts by stereotyping the various works as they appear would seem to be not only worthy of adoption, for the sake of securing a complete edition, but would also in the long run save large sums of money.

The Investigation of Swedenborgiana and New Items.

The "Report on miscellaneous Swedenborgiana discovered since 1877" was laid before the Swedenborg Society last year and has been considerably amplified by subsequent researches and discoveries in Swedish archives. A condensed List of the new items discovered since the *Documents concerning Swedenborg* appeared, London, 1875-77, will be submitted in several of the New Church periodicals for purposes of correction and amplification. The Chronological List of Documents will then be edited together with the Chronological List of Works in the *Appendix* to Vol. I. of *Opera Quædam*. Among the new materials discovered during the past year are several memorials by Swedenborg in the State Archives and additional documents concerning the Gothenburg Controversy in the Consistory Archives at Gothenburg. Some preliminary work has been done by Miss Cyriel Lj. Odhner in copying the new materials. Miss Odhner has also completed the copying of the Minutes and other papers of the *Societas pro Fide et Charitate*, the discovery of which was reported in the last annual report.

The results of the great Swedenborg revival in Sweden continue to show themselves in many ways, some ephemeral, others of a solid character. One of the most encouraging signs is a great increase in the sale of Swedenborg's works. The proposal to erect a bronze statue of Swedenborg in heroic size on Hornsgatan has been received here and abroad with considerable interest, but the monument which the Revival of interest in Swedenborg's works and

achievements has during recent years erected to his memory is more lasting than brass: *Monumentum ære perennius.*

Praying that the work of the united New Church in the reproduction of Swedenborg's manuscripts and in connected operations may go forward in the future with the same success as in the past, I remain,

Your obedient servant,

ALFRED H. STROH.

Library of the Royal Swedish Academy of Sciences,
Stockholm, April 25th, 1912.

A Report and Communication to the Swedenborg Scientific Association.

(Reprinted from *The New Philosophy*, July, 1912.)

THE SWEDENBORG SCIENTIFIC ASSOCIATION:

My first duty in submitting the present Report and Communication is to express to the Association my heartfelt acknowledgement of the resolutions passed last year respecting the work in Sweden. Now that the chief printing societies of the New Church have united in the important use of reproducing Swedenborg's MSS. by photographic methods, a use fundamental not only to the printing of Swedenborg's theological texts, but also of his scientific, philosophical and miscellaneous works and documents, the scope of proceedings in Sweden has indeed been greatly expanded, but the future historian of the Swedenborg Scientific Association will record with satisfaction that the success of the present comprehensive movement was largely due to the faithful and energetic support of the Association during a period when very few persons realized the fundamental importance of the work whose value has now been acknowledged by the whole New Church and also by the universities and learned societies of Sweden. The Association cast its bread upon the waters, and after many days it has returned.

My second duty is to thank the Association for the grant of money recently received through the Treasurer of the London Swedenborg Society. This contribution will be employed for special work on the scientific MSS. of Swedenborg, especially upon those

which have been copied for the Association, but not yet revised. During the past year the following unrevised copies of MSS. or portions of MSS. have been transmitted to the Secretary of the Association; Codices 36, 37, 86, 88 (a portion only) and 99 (printed 1904 in *Noraskogs Arkiv*). The MSS. formerly sent were Codices 81, 82, 83, 84 and 85. I am also about to forward all the copies made by or for me and which were presented to the Association some ten years ago. As the Secretary of the Swedenborg Committee of the Royal Swedish Academy of Sciences I have to thank the Association for the use of these copies in the edition of the scientific texts *Opera Quædam de Rebus Naturalibus.*

In the great stress of work in connection with the recent celebrations in memory of Swedenborg the printing of texts and translations was considerably delayed, but it is now making more rapid progress and new plans for its extension have been submitted during the past year and in some cases adopted. Vols. III. and IV. of *The Brain* having been to a great extent prepared for press by Dr. R. L. Tafel and the Rev. James Hyde I suggested last year to the Swedenborg Society's Committee that these materials be submitted to Professor O. M. Ramström and myself for further examination and preparation in connection with the editing of the Latin texts of *The Brain* in *Opera Quædam.* The suggestion was adopted and it is hoped that as the work on the Latin texts proceeds the English translations, Vols. III. and IV. of *The Brain*, will also be completed for publication. Students of Professor Ramström's *Investigations*, etc. will realize what kind of work may be expected from this eminent authority. If the historical and critical investigation of Swedenborg's contributions to science and philosophy can be accomplished in the same thorough way in which Professor Ramström has treated and solved special questions in his *Investigations* much substantial progress will be made. Certainly a powerful new light has during recent years been thrown upon Swedenborg's geology, cosmology and brain anatomy by Professors Nathorst, Arrhenius and Ramström, showing the grandeur of Swedenborg's discoveries and also indicating his limitations. It is this balanced, comparative, critical study which is so much needed in the discussion of these difficult problems.

A distinguishing feature of the newer researches into Swedenborg's science and philosophy which is coming to the front more and more is the discussion of the literature which Swedenborg employed, the historical sources which influenced his investigations, and indeed furnished the basis without which he could never have accomplished

his work. In reviewing the history of interpretative discussion of Swedenborg's "early works" it is astonishing to see how little has been done to examine into these sources. Many comparisons have been made of the discoveries and theories of Swedenborg's scientific and philosophical works with the later theological works, and with modern science and philosophy, but the important field of the sources and development of the *Principia* and *Regnum Animale* has been but little cultivated. The Cartesian philosophy of particles and vortices and the subsequent Newtonian non-vortical theories are more and more clearly seen to be two of the important factors which most deeply influenced all physical philosophy during the period 1650-1750, and which explain a great many ill understood features of Swedenborg's *Principia*. Nor should the Cartesian psychology be neglected in a critical study of Swedenborg's early discussions of mind and body.

I need only refer very briefly to the articles and memorials on the phototyping and proposed complete edition of Swedenborg's texts recently submitted to the printing societies of the New Church to several periodicals, and in over a hundred copies to editors and other interested persons. The stereotyping and *Opera Omnia* proposals have been very heartily endorsed, by some of my correspondents, but no decision can as yet be arrived at. Since these questions also intimately concern the publication of scientific texts by the Association I recommend the proposal to stereotype all of Swedenborg's texts in the same size and type to your careful consideration. Since so many of Swedenborg's texts are now being published or proposed for publication in Europe and America it would seem to be prudent to prepare for a final complete edition of all of Swedenborg's literary remains. Only then will athletic students of his works be able to follow in detail the various stages of their development. Such an edition *Opera Omnia Emanuelis Swedenborgii* is most desirable, and by stereotyping all the texts as they appear the final accomplishment of the plan will be secured.

Hoping that the Association will have a successful meeting, I remain,

Yours faithfully,

ALFRED H. STROH.

Stockholm, April, 1912.

THE SWEDENBORG ARCHIVES

PART II.

REPORTS AND DOCUMENTS

FROM

1902 TO 1918

EDITED BY

ALFRED H. STROH, M. A.

STOCKHOLM
P. A. NORSTEDT & SÖNER
1918

STOCKHOLM 1918
KUNGL. BOKTRYCKERIET. P. A. NORSTEDT & SÖNER
180750

PREFACE.

In continuing *The Swedenborg Archives* by the publication of the present Part II. a second step is taken in laying before students of Swedenborgiana the results of investigations in Sweden and abroad since the year 1902. The minutes of the Swedenborg Committee of the Royal Swedish Academy of Sciences, together with the collection of annual and monthly reports, bring the official records up to date, supplementing Part I. of the *Archives*.

It is the editor's intention to do full justice to the labors of his predecessors Dr. Rudolf L. Tafel and the Rev. James Hyde in the present series of *Archives* by publishing their unprinted results in Vols. II. and III. Vol. II. will contain the unpublished Swedenborg investigations of Hyde and Tafel and Vol. III. will consist of the editor's »Chronological List» of Swedenborgiana largely based on Tafel and Hyde. The documentary results themselves edited by the undersigned since the year 1902, when the investigation of Swedenborg's life and works was begun in Sweden and the Swedenborg Committee of the Royal Swedish Academy of Sciences was appointed, will appear in later volumes in an English translation and the original languages.

The phototyping of Swedenborg's manuscripts and the editing of texts have progressed so far that the elaborate critical investigations represented by the results to be published

in these *Archives* may now be sent to press. Vols. I. to XVIII. of Swedenborg's Phototyped Manuscripts, *Emanuelis Swedenborgii Autographa, Editio Phototypica*, are about to be published, the printing of the last volume being almost completed. In Vols. XIX. to XXV. Swedenborg's remaining MSS. will probably be phototyped during the next decade.

Upsala, January 29th, 1918.

Alfred H. Stroh.

CONTENTS.

Page.

Annual Report of Work on Swedenborgiana in Sweden, 1912—1913, with proposals for a Complete Edition of Swedenborg's Works and for a Bronze Statue of Swedenborg in Stockholm 79

Annual Report of work in Sweden on Swedenborg's manuscripts and documents concerning Swedenborg, 1913—1914 86

Annual Report, 1914—1915, with Documents 94

Annual Report of Work in Sweden on Swedenborg's Manuscripts and related Archives 120

Chronological List Accounts, 1913—1915 134

Chronological List Itemized Expenses 1913—1915 135

Monthly Reports, 1911—1916 138

Annual Report of Work in Sweden, 1915—1916 172

Proposed Continuation of the Phototyping of Swedenborg's MSS. and Work in Sweden 182

Phototyping Account, 1910—1916 186

To the American Societies engaged in the phototyping of Swedenborg's Manuscripts and in the Work in Sweden 187

A Communication to the Council of the Swedenborg Society re Unfinished Business in Sweden, May, 1916 189

Proposals for continuation of Work in Sweden 192

Report of Sub-Committee 195

Annual Report of Work in Sweden on the Reproduction of Swedenborg's Manuscripts, 1916—1917 210

A Special Report to the Board of Directors of the Swedenborg Scientific Association 213

The Swedenborg Scientific Association and the Work in Sweden 216

Continuation of the Work in Sweden, 1917—1918 219

Annual Report of Work in Sweden, 1917—1918 227

Ways and Means for publishing Swedenborg's Scientific Texts . 232

Resolutions of the London Swedenborg Society, 1908—1913, on Work in Sweden 234

Page.

Proposed reorganisation of the Work in Sweden 243
Quarterly Report of Work in Sweden, for the quarter closing March 31st, 1918 245
Quarterly Report of Work in Sweden, for the quarter closing June 30th, 1918 247
A Retrospect of the Work in Sweden 249
A Special Report to the Academy of the New Church on Unfinished Business in Sweden 251
Special Report to the Swedenborg Scientific Association 257
Open Letter to the Swedenborg Society of London, British and Foreign 259

Annual Report of Work on Swedenborgiana in Sweden, 1912—1913, with proposals for a Complete Edition of Swedenborg's Works and for a Bronze Statue of Swedenborg in Stockholm.

The work of publishing and investigating Swedenborgiana undertaken over ten years age in Stockholm by a number of organisations has made substantial progress in various directions. A full and consecutive account of the work has been printed in handy form in Part I. of *The Swedenborg Archives*, Stockholm, 1912, being the first issue of a series dedicated to Professor Dr. Gustaf Retzius, whose sympathetic interest and energetic support have at various times greatly forwarded the investigation and publication of Swedenborgiana and the measures taken to honour the memory of Swedenborg. Besides the numerous reports and communications collected in Part I. of *The Swedenborg Archives*, monthly reports have been forwarded to the societies interested in the work in Sweden, and the order of the items referred to in the monthly reports for the past year will also be employed in the present annual report. In addition some account will be furnished of proposals of a Complete Edition of Swedenborg's Works and of a Bronze Statue of Swedenborg in Stockholm.

The Phototyping of Swedenborg's Theological Works.

During the past year the *Index Biblicus*, in three folio volumes, and the *Adversaria*, also in three folio volumes, have been completed in phototyped reproductions, and are about to be distributed. Progress has also been made with the phototyping of the volume *Miscellanea Theologica*, and the first volume of *Arcana Coelestia* is now

so far completed that work on Vol. II. has been begun. Materials for *Swedenborgiana*, Part II., have also been collected. In addition, certain manuscripts left unbound over 40 years age after the photo-litographing have been substantially and handsomely rebound at the expense of the Swedenborg Society of London. Rapid progress has been made with the phototyping of the *Arcana Coelestia* by employing two new boxes with double glass fronts in which the precious manuscript leaves are carried to and fro between the Library of the Academy of Sciences and the phototyping firm Lagrelius and Westphal. Immediately after the photograping of a manuscript volume, which must be taken apart for the purpose and carefully numbered by the officials of the Academy of Sciences, the manuscript is rebound and replaced in the Swedenborg Deposit. Every care is taken to preserve the priceless original manuscripts in their integrity

The Printing of Swedenborg's Scientific Works.

Some progress has been made with the editing of future volumes of the scientific texts of Swedenborg in the Stockholm series *Opera Quaedam de Rebus Naturalibus*, and the text of Vols. IV. and V. will soon lie finished in print. The last steps will it is hoped soon be taken to arrange for the inclusion of the five volumes of the series now published or in press, together with the three volumes of the *Opera Philosophica et Mineralia*, soon to be undertaken, in the proposed complete edition of Swedenborg's works *Opera Omnia Emanuelis Swedenborgii*, concerning which below.

All the copies of Swedenborg's manuscripts reported by me to the Swedenborg Scientific Association during the past ten years have now been forwarded to the Secretary, the Rev. Reginald W. Brown, and I am corresponding with the Association's President, the Rt. Rev. Frank Sewall, regarding the new edition of *The Worship and Love of God*, the text and revised translation of the work having recently been forwarded to America.

The Investigations of Swedenborgiana and New Items.

During the past year a great deal of attention has been devoted to a general investigation and Survey of Swedenborg's MSS. and Printed Texts, and of Miscellaneous Swedenborgiana, in order that the whole question of editorial plans and operations may be solved satisfactorily. The results are most interesting, greatly extending our view of Swe-

denborgiana in general and in particular, and I am now engaged in treating bibliographically, in a preliminary manner: 1) materials *by* Swedenborg, and 2) materials *concerning* Swedenborg dating from his own times. In this laborious task I have not only had since 1902 the assistance and advice of numerous librarians and other scholars in Sweden and abroad, but have also received most valuable help for ten years from Miss Greta Ekelöf in the investigation of Swedenborg's works, and from Miss Cyriel Lj. Odhner during the past year in the investigation of miscellaneous documents. I propose to edit the *Chronological List of Works and Documents by Emanuel Swedenborg* as a separate work, and subsequently, with the combined assistance of Miss Ekelöf and Miss Odhner, to issue the unabridged *Chronological List of Swedenborgiana*, including references to materials both by and concerning Swedenborg, in the *Appendix* to Vol. I. of the edition of the Royal Swedish Academy of Sciences, after the removal of the Swedenborg Deposit to the new Library Building at Frescati near Stockholm in 1914. Finally, if possible, the numerous new and old documents, which throw so much light on the life and works of Swedenborg, will be published in *The Swedenborg Archives*. This will lay the foundations for a new and exceedingly thorough study of Swedenborg's mental development and literary progress.

During the past month the drafted *Chronological List of Works and Documents by Emanuel Swedenborg* has been typewritten, and is being forwarded section by section to London, Bryn Athyn and Cambridge. The typewriting of the *Chronological List of Swedenborgiana* is also in hand, and materials for an *Appendix* are being collected. The collections fill several hundred pages in folio and an attempt is being made to include references to all new and old Swedenborgiana dating from Swedenborg's own times, a great many new items having been discovered since the publication of those immortal works, *The Documents concerning Swedenborg*, by Rudolph L. Tafel, and *The Bibliography of Swedenborg's Works*, by James Hyde.

Proposed Complete Edition of Swedenborg's Works.

The Chronological List now being edited will make possible a nearly complete survey of Swedenborg's literary remains and of printed an unprinted information concerning them dating from his own times, the later material being fully referred to in the *Documents*, *Annals* and *Bibliography*, which are of course freely employed in the *Chronological List*. Such a collection of references is necessary in the editorial plans and undertakings which are more and more coming to

the front. It is hoped that sooner or later by the combined action of all interested corporations and individuals a Complete Edition of Swedenborg's Works will be undertaken.

The proposals submitted by me to the printing societies of the New Church with regard to the stereotyping of all texts of Swedenborg in a uniform size and style, with a view to a final complete edition *Opera Omnia Emanuelis Swedenborgii*, have been the subject of considerable discussion and correspondence during the past year, and I was expecially encouraged by the endorsement given to these proposals last year by the Swedenborg Scientific Association and by the Academy of the New Church. But as some of the parties interested desire one course, and others another course, nothing final has been arrived at, but I hope in the near future to explain in detail to the several boards and committees the great advantages which would be won by the adoption of these plans and by united action. The practical thing to do is to deposit sufficient capital in the Swedenborg Fund of the Royal Swedish Academy of Sciences to ensure the final appearance of the proposed *Opera Omnia* and the publication of supplementary material, and also for the honoring of Swedenborg's memory by the erection of his statue at Stockholm and in other suitable ways.

For further information concerning the proposed *Opera Omnia* see a contribution in *The Swedenborg Archives*, Part I., 1912, pp. 62—65: »How to solve the Problem of a Complete Edition of Swedenborg's Works, a Memorial addressed to the Printing Societies of the New Church and to Editors of Swedenborg's Texts.»

The copies made for the Swedenborg Scientific Association, including ten copies of smaller works presented to the Association some years ago, are now all deposited in its Archives, and a great collection of copies is also deposited in the Library of the Royal Swedish Academy of Sciences for the use of the Swedenborg Committee. Recent experience with typewritten copies has, however, convinced me that there is the best solution, for not only one, but five or six legible copies, can easily be produced directly from the original. I have therefore planned for the reproduction in 6 typewritten sets of the numerous old and new documents as referred to in the *Chronological List*, and the work of copying has been begun at Stockholm, Gothenburg and Helsingfors, as a strong interest in the plan to produce such typewritten copies was shown by several societies and individuals. The copying of the minutes and other papers of the Society *Pro Fide et Charitate* had previously been forwarded by a generous contribution of Mr. John Pitcairn, and the three typewritten co-

pies produced by Miss Cyriel Lj. Odhner have recently been bound in parchment and placed in the Libraries of the Royal Swedish Academy of Sciences, of the Academy of the New Church, and of the New Church Theological School at Cambridge. One half of the expenses for the typewriting of the 700 pages folio was paid for by The New Church Theological School. It is proposed that a set of all copies made shall be presented to the Library of the Royal Swedish Academy of Sciences.

In a recent trip to Finland I found at Helsingfors a great collectio of documents illustrating Swedenborg's life and the early history of New Church movements in Sweden and other parts of Europe shortly after his death. The documents have been preserved for over a century at Frugård, the ancient homestead of the Nordenskiöld family near Helsingfors, and permission to copy them has been received from the family. There are several collections of letters, including many by prominent early New Churchmen such as Beyer, Hartley, August Nordenskiöld, Carl Fredric Nordenskiöld, C. B. Wadström, Pernetty, and others; also circulars and minutes of the Exegetic and Philanthropic Society, and numerous MSS. illustrating the early thought and life of the New Church. — Among the documents is a MS. copy of Swedenborg's *Coronis*, differing in several respects from the edition published by Dr. J. F. I. Tafel in 1841 in *Eman. Swedenborgii Diarii Spiritualis . . . Edidit Jo. Fr. Im. Tafel. Tubingae, 1846.*

The proposal to erect a bronze statue of Swedenborg in the city of Stockholm has been noticed in the *Morning Light* and *New-Church Messenger*, and I shall close the present annual report by quoting a short communication published last year in *Morning Light.*

Proposed Bronze statue of Swedenborg at Stockholm.

Ever since the proceedings in honour of Swedenborg came to their fitting climax and conclusion on November 19th, 1910, by the unveiling of his Sarophagus in the Cathedral of Upsala, the question of a bronze statue of Swedenborg at Stockholm has been under consideration by students and admirers of the great investigator and seer in Sweden, England and America. As this question has been referred to in recent issues of *Morning Light*, it may be proper for the undersigned as the original proposer of the erection of the statue briefly to describe the conditions at Stockholm which first suggested the plan.

Anyone acquainted with the Swedish capital will be greatly attracted by its beautiful position and surroundings, by the historic asso-

ciations connected with its buildings, and by the statues erected in memory of great Swedish kings and scientists. It is remarkable that nearly all of the statues ever erected are either in memory of great kings, for instance, Gustaf Vasa, Gustavus Adolphus, Charles XII., and Gustavus III., or in honor of such famous scientists as Linnaeus, Scheele, Berzelius, Retzius and Ericsson. But nowhere do we find Swedenborg. And why? Because only within the last ten years has the true greatness of the scientist, philosopher and theologian, his universal genius and worldwide significance, been publicly recognised in his native land and city. But how remarkable was that recognition! I need not remind readers of *Morning Light* of the events which were so fully described in its pages. The unveiling of the magnificent sarcophagus at Upsala in the presence of the King of Sweden and the Royal Family, and of the representatives of Swedish and foreign corporations associated with Swedenborg's name and works, testified to the revolution in public opinion which had taken place, and which was crystallized in the never-to-be-forgotten International Swedenborg Congress.

After the audience of the Swedenborg Society's deputation with His Majesty Gustaf V., and after the proceedings at Upsala, the question of the proposed statue was very thoroughly discussed with the late Mr. James Speirs, the official representative of the Swedenborg Society on those occasions. It was his opinion that since Swedenborg had been so greatly honoured at Upsala it would now be advisable to take similar steps at Stockholm by the erection of the proposed statue. Not only Mr. Speirs, but also all the other English and American visitors who have seen the proposed site of the statue on Hornsgatan, a few steps from the place where Swedenborg lived and wrote from 1743 until his last journey to England, have heartily declared in favour of the proposed monument to his memory.

The proposed site is at one end of the beautiful Adolf Fredrik Square, opening out on Hornsgatan, on which Swedenborg had his property and along which he passed on his way to the House of Nobles and meetings of the Swedish Parliament and Academy of Sciences. At the opposite end of the Square Swedenborg Street (»Swedenborgsgatan») opens. The middle and opposite end of the Square are already occupied by bronze monuments, so that the proposed statue of Swedenborg would form one of a trio in the midst of paths bordered by flower-beds, shrubs and trees. The proposed site is therefore both historically and artistically appropriate.

The officials at Stockholm whom I have thus far consulted with regard to the site and the proposed statue were united in their endor-

sement of the plan as being both appropriate and practicable, provided of course that the necessary funds can be secured. All the arrangements for the erection of the statue could be made by a committee at Stockholm if the funds were in hand, and the two questions remain:

1. Would there be any difficulty, provided permission were given by the City of Stockholm, in securing the services of a competent Swedish artist?

2. In what manner could the necessary funds be raised?

The first question need raise no difficulty, for there are several competent Swedish sculptors who would be willing to execute the work. And the second question will be solved if there be sufficient interest and energetic enthusiasm well directed and organised in Sweden and abroad.

It may be that although there is at the present time so excellent an opportunity for the erection of the proposed statue that conditions are such that action should be indefinitely postponed. But if there should be a sufficiently strong interest in this proposal at the present time, the question of a suitable date for the erection of the statue will arise. A most appropriate year would be 1916, the two hundredth anniversary of Swedenborg's appointment by King Charles XII. to an assessorship in the Royal College of Mines and thus of his first entrance upon his official duties in the service of his native land. In the same year Swedenborg also printed his first remarkable contributions to science in the *Daedalus Hyperboreus*, which is also the first scientific periodical published in Sweden. In publishing the *Daedalus* Swedenborg was intimately associated with King Charles XII. and with his great engineer Christopher Polhem. The year 1916 would therefore be very suitable for the above reasons, for during that year the attention of the Swedish nation will no doubt be repeatedly directed to the memories associated with the names of Charles XII., Polhem and Swedenborg. In connection with the erection of the proposed statue meetings might also be held in the historic House of Nobles, during wich Swedenborg's significance for Sweden and mankind might be properly presented and emphasized.

All of which is respectfully submitted,

by your obedient servant,

ALFRED H. STROH.

Stockholm, May 29th, 1913.

Annual Report of work in Sweden on Swedenborg's manuscripts and documents concerning Swedenborg, 1913—1914.

The present belated Annual Report, delayed since last spring because of the writer's prolonged nervous breakdown, will describe in some detail the work in Sweden and Europe since the preceding annual report for 1912—1913. At the present time a number of items of unfinished business are still pending, but some progress has been made during the last few weeks, and while the writer was absent from February to September the work of phototyping Swedenborg's theological manuscripts and of typewriting the *Chronological List* has proceeded as before, the typewriting of the *List* being later interpreted by the Council of the Swedenborg Society to include also the copying and translating of Documents by and concerning Swedenborg and in fact all connected textual and editorial work. During the editor's absence the work in Sweden has been in charge of a number of assistants, the continued course of the various undertakings having been determined by the Acting Secretary of the Swedenborg Society, the Rev. Arthur Wilde, who visited Stockholm twice, in March and in July, for the purpose of making necessary arrangements, and on account of whose energetic initiative and the united action of the Swedenborg Society's Council and associated English and American bodies the uninterrupted progress of the the work in Sweden has been made possible since last February. All institutions and persons connected with the various undertakings in hand will feel thankful for the strong support given by the Swedenborg Society during the difficult period now over.

Phototyping.

The work of phototyping the *Index Biblicus* and the *Explicationes in Verbum seu Adversaria*, each consisting of three large folio volumes, having been completed, they are being furnished with Latin titlepages and prefaces before being bound and distributed. Considerable progress has also been made with the volume of *Miscellanea Theologica* and with the *Arcana Coelestia*, three volumes of the latter having been phototyped and the fourth of the five volumes of

this large manuscript being now in press as planned last year. During the editor's absence since February, when the last complete monthly report was written by him, the monthly reports have been confined to the phototyping work and have been prepared by Miss Greta Ekelöf, first assistant librarian in the Royal Swedish Academy of Sciences. My best thanks are due to Miss Ekelöf for her invaluable assistance in the work during my prolonged absence. The phototyping has, therefore, proceeded as usual, and at the present increased rate, made possible by larger contributions from England and America, and by the added contributon of the Conference of the New Church since 1913, it will not be long before the *Arcana Coelestia*, by far the largest of Swedenborg's MSS., will be completed. Next will follow, according to the London Resolutions of July 11th, 1910, the first draft of the *Apocalypsis Explicata* and the Index of *Apocalypsis Revelata*, etc. Numerous other theological, scientific, and miscellaneous MSS. remain to be reproduced in *facsimile*, but their possible reproduction by the phototyping process will be a *cura posterior*. After all the theological manuscripts shall have been phototyped the question of phototyping Swedenborg's scientific and philosophical manuscripts, and miscellaneous original documents by and concerning Swedenborg, will come up for solution.

Scientific Works.

Of the Stockholm series Vols. IV. and V. have long been in press. Furnished with introductions and notes and published, these two volumes will bring the editing of Swedenborg's earliest scientific works in Swedish and Latin to a close. The three volumes of the *Opera Philosophica et Mineralia*, comprising the *Principia* and the works on *Iron* and *Copper*, will follow as Vols. VI. to VIII., the remaining volumes of the series having been planned to contain the anatomical, physiological and psychological works of Swedenborg up to the *Worship and Love of God.* Of this work a new and revised translation, including Part III. and some other unpublished fragments, was published last January at Boston, owing tho the interest taken in the printing of the volume many years ago by the Rotch Trustees, especially by Horace Parker Chandler, Esq. The associate editors not having included all of the fragments, nor the various copies of manuscript materials in Latin and the collection of bibliographical and editorial notes produced by the writer since 1901, an effort will be made to issue those materials separately as a special publication, including

a thoroughly revised translation of Part III. and the other fragments and notes left by Swedenborg in MS. Possibly a résumé of these unpublished materials will be added as an Appendix to one of the chapters of the writer's »Outlines of the Life, Philosophy and Influence of Emanuel Swedenborg», a revised and greatly extended English edition of my little Swedish biography, *Grunddragen af Swedenborgs lif*, which, with the assistance of my secretary, Miss Cyriel Lj. Odhner, I am now preparing for press. Some interest has been shown at Boston in the publication of these *Outlines*. The work will present recent results and a résumé of the history of past investigations concerning Swedenborg and Swedenborgiana, together with numerous illustrations collected in Sweden and abroad since 1902. The New Church Publishing Society of Stockholm, the publishers of the *Grunddragen* in January, 1909, has also agreed to publish an enlarged Swedish edition of this biography of Swedenborg which will be illustrated very completely and furnished with several diagrams explaining Swedenborg's philosophy and the doctrine of discrete degrees.

When in London during the summer of 1913, after having delivered an address at the Annual Meeting of the Swedenborg Society, at which an important motion was passed with regard to the typewriting of the *Chronological List*, to be referred to below, I also, with the assistance of the Rev. E. J. E. Schreck, of Miss Chapman and her Albion Typewriting Bureau, and of Mr. Paul Blaise, arranged for further editing, with a view to final publication, the literary remains of Dr. R. L. Tafel and of the Rev. James Hyde so far as they relate to Swedenborg's »The Brain» and to the »Documents concerning Swedenborg». The materials relating to »The Brain», Vols. III. and IV., were forwarded to the Library of Upsala University with the consent of the Council of the Swedenborg Society for further editing by Professor Dr. O. M. Ramström and myself, and the numerous originals, copies, and translations of »Documents concerning Swedenborg», partly arranged in folders by Mr. Hyde, were completely arranged in that manner and furnished with a preliminary list of »old» and »new» documents before being forwarded by the Swedenborg Society to the Library of the Royal Swedish Academy of Sciences for use by the writer and his assistants in the work on Swedenborg's MSS., etc. For a detailed account of the abovementioned researches see two articles which will soon be contributed to the *New-Church Quarterly*, London.

Swedenborgigna and New Items.

At the Annual Meeting of the Swedenborg Society referred to above the writer laid on the table a folio volume containing som 400 pages of *A Chronological List of Works and Documents by and concerning Emanuel Swedenborg.* This work had previously awakened such interst that David Wynter, Esq., offered at the meeting to subscribe £ 50 *per annum* for three years for the completion of the work, if a like sum were subscribed from other sources. The President of the Society, Sir Thomas Elliott, immediately moved that with the acceptance of Mr. Wynter's generous offer the work should be proceeded with. Two additional subscriptions were received at the meeting from other gentlemen who were especially interested, and later the Society's Council passed a resolution authorising a contribution of £ 100 *per annum* for the work if the cooperation of American institutions could be secured to the extent of £ 200 *per annum.* Later during the summer, John Pitcairn, Esq., who has supported the *Chronological List* investigations most generously since they were undertaken in 1902 during the writer's first visit to Sweden, agreed to meet all previous expenses connected with this work, and also, on behalf of the Academy of the New Church, to an annual subscription of £ 100 according to the terms of the resolution. Similar favorable action it is hoped will follow on the part of the New Church Theological School and connected interests at Cambridge and Boston, the six sets of all lists, copies, translations, etc., etc., as also four sets of photographs and slides, thus being made accessible in London, Bryn Athyn, Cambridge and Stockholm. Two copies of all typewritten matter will be retained for editorial purposes by the writer, the Royal Swedish Academy of Sciences being also furnished with a set for use by students of Swedenborg's original MSS. in that important and central Swedish Library which, together with all of Swedenborg's priceless original manuscripts and editions, has been removed recently to the Academy's new library building at Frescati in the immediate neigbourhood of Stockholm. This new library is of course entirely fireproof and all New Churchmen and admirers of Swedenborg will feel greatly reassured in knowing that the priceless manuscripts of Swedenborg, and also of his great contemporaries and successors such as Linnaeus and Berzelius, are now quite safe, as safe as it is possible to make them, and also that the great scientific library of the Academy of Sciences, by far the largest in the North, is also housed in a similarly reliable way.

The work on the *Chronological List* has been very nearly brought to a successful conclusion in its preliminary form due to the invaluable assistance received since 1902 from Miss Greta Ekelöf, and since 1909 from Miss Cyriel Lj. Odhner, not to mention the numerous librarians and other officials and investigators who have furnished information or advice. Miss Ekelöf's work has been mostly confined to the bibliographical analysis of Part I. of the *List*, comprising »Works by Swedenborg». In a greatly abridged form this Part appeared in 1910 in English and Swedish editions. Miss Odhner's work has been chiefly concerned with the exceedingly laborious and very extensive investigations connected with Parts II. and III., comprising »Documents by Swedenborg» and »Documents concerning Swedenborg». After highly successful researches in a number of Swedish archives and libraries, Miss Odhner visited American New Church libraries in 1913 at Bryn Athyn, Philadelphia, and New York, before returning to Stockholm in January last in order to continue with the work of listing, copying, and translating the constantly increasing collections. In the meantime I had edited in a preliminary way Parts I. and II. of the *List*, including also Part III. up to the close of the year 1745, and had laid the volume before the Swedenborg Society with the very gratifying results described above in this report. The Rev. J. E. Rosenquist had also in 1912 begun to copy the numerous »Gothenburg Documents», with which he is now proceeding, having completed some 500 pages folio in six sets, and also, during the previous autumn and winter, no less than 857 pages folio of the important new collection of documents concerning the Gothenburg Controversy in the Göta Supreme Court at Jönköping. Since returning to Stockholm Miss Odhner has also produced some 700 pages folio of copies of new documents by and concerning Swedenborg, many of which she has moreover translated (see a number of them published in recent issues of the weekly *Morning Light*, London). Miss Odhner has been and will be occupied for some time in still further extending the *List* by entering a great mass of new and very important items found in America and Sweden by herself and others, including all of the editor's collections since the year 1902. A great quantity of new items turned up during the editor's researches last year in London and on the Continent, as well as at Skara, recently revisited before returning to Stockholm to continue with the work on the MSS. All items in Sweden, Finland, and Russia, in England and on the Continent, and in America having been listed and copied, the numerous collections of original new documents may appear in translated form, greatly supplementing the three volumes of »Documents concerning

Swedenborg» edited by Dr. R. L. Tafel, and thus increasing our knowledge of Swedenborg's life, works and times to a very great extent. The reproduction of these documents in the original languages by printed editions of the text, and possibly by phototyping them, which is the most suitable process for such *facsimile* reproductions, will also be necessary if students are to have complete access to the original evidence. In the meantime the typewritten copies accessible at Bryn Athyn, Cambridge, London, and Stockholm, will supply specialists with reliable sources in typoscript.

The original works and documents of theological, philosophical, scientific, and miscellaneous content having been made accessible in copies published and unpublished, their historical and critical analysis may be undertaken. Dr. R. L. Tafel in the published »Documents», and also the Rev. James Hyde in a very detailed series of »References», filling over a thousand typewritten pages in folio, have produced a valuable preliminary body of analytical and editorial notes. The unpublished »References» of the Rev. James Hyde, the results of a longcontinued and exceedingly thorough and painstaking analysis, will probably be published sooner or later Part by Part as arranged last year in London, the whole mass having been typewritten in six sets by Mr. Paul Blaise of London in a very exact and scholarly manner. For preliminary contributions on the unpublished results of Tafel and Hyde see forthcoming articles in the *New-Church Quarterly*, London. According to instructions received from the Council of the Swedenborg Society, and with the cooperation of the editor of the *New-Church Magazine*, the Rev. J. R. Rendell, B. A., the *Chronological List*, after much additional editing and revision, will be published in complete form by instalments in the pages of the *Magazine*, thus making accessible a very extensive body of bibliographical references recording a great number of new and old works and documents by and concerning Swedenborg. A very considerable proportion of the items listed are at present quite unknown in the literature concerning Swedenborg and the New Church and will therefore greatly increase the accessible sources of knowledge, finally leading to the publication of numerous texts, translations, and historical works.

It will be evident from the above account how important it is, if the *Chronological List* and the new edition of »Documents concerning Swedenborg» are to be really complete and exhaustive so far as they can be made at present, that the work of Miss Cyriel Lj. Odhner at Stockholm, and of the Rev. J. E. Rosenquist at Gothenburg, should be continued until all documents shall have been listed, copied, and translated. Later would follow the complete editing of the originals

and of translations in the *Swedenborg Archives* or in some other suitable form. The necessity of thoroughly revising the great work of Dr. R. L. Tafel, »Documents concerning Swedenborg», has become evident as a result of later research, and the volume of evidence has been gradually doubled and trebled.

In the near future the following collections of typewritten copies of *Chronological List*, original Documents, and Translations, References, etc., will be distributed to the contributing institutions in revised and bound form: 1) The revised and bound *Jönköping Documents*, some 900 pages folio, in six typewritten sets; 2) The revised and bound *Gothenburg Documents*, Vol. I., about 500 pages; Vol. II. to contain the remainder, including the *Skara Documents;* 3) Vols. I. and II. of *Stockholm Documents*, about 500 pages each, arranged aacording to the various institutions from which they have been derived; 4) Four sets of officially certified *Genealogies* of the Swedenborg Family from the House of Nobles; 5) A volume or two of *Translations* of the copies from Stockholm institutions; 6) Remainder of *Chronological List*, Part III., on slips, and also later on several *Appendices* and *Additions* to the *Chronological List*, on folio pages; 7) *Hyde's References* to Swedenborg's Life and Works, with *Preface* to the volume by the editor.

The great world war has not thus far in any way retarded the various undertakings in Sweden to edit and publish the manuscripts of Swedenborg and miscellaneous Swedenborgiana. The only project which seems likely to be retarded is the erection of the proposed bronze statute of Swedenborg at Stockholm, a project which has been so heartily endorsed by a number of Swedish, English and American admirers of Swedenborg. And even this project is making decided progress in spite of the unsettled conditions produced by the war. I have this week had the pleasure of meeting at the Sanatorium here the President of the Stockholm Town Council. This important official, Dr. Sixten von Friesen, immediately showed great interest in the proposal to erect a bronze statue of Swedenborg at Stockholm and informed me that in such cases a great expense is defrayed by the City, which supplies the site and a granite base for the statue free of charge. Dr. von Friesen at once raised the question of who should make the model of the proposed statue. The artist to be chosen should, we agreed, most properly be a Swede; and the President suggested the most famous artist of Sweden, who also has an international reputation, namely, Anders Zorn. He has produced a remarkable bronze statue of Gustavus Vasa at Mora in Dalekarlia, and also desires to model a statue of the Dalekarlian hero Engelbrekt

to be placed in front of the Swedish Parliament Building, »Riksdagshuset», at Stockholm. Dr. von Friesen agreed that if an artist were first chosen by some such Swedish corporation as the Swedenborg Committee of the Royal Swedish Academy of Sciences, a memorial on the subject, together with appended memorials from English, American, and other corporations, might then be sent in to the City Government of Stockholm for consideration and action. The President seemed to be especially pleased with the idea that the proposed Swedenborg Statue would be the result not only of Swedish interest but also of the world-wide support of international corporations. In view of these favorable conditions it therefore seems probable that after the war this question will again come up for what may be a final and most satisfactory solution.

In conclusion, I desire to thank most heartily the English, Amerisan and Swedish bodies and individuals who have extended to me their kind sympathy and assistance during my late severe and prolonged illness, and especially to the Council of the Swedenborg Society and their officials and to my esteemed friend Mr. John Pitcairn, who with the Rev. Arthur Wilde inspected the work at Stockholm during July and did everything possible to relieve the serious situation which had arisen and which is now happily drawing to a close. Fortunately, my assistants, Miss Greta Ekelöf, Miss Cyriel Lj. Odhner, and the Rev. J. E. Rosenquist, were able to continue without interruption the phototyping of Swedenborg's Manuscripts, the *Chronological List*, and the Copying of Documents, the editing of the Stockholm edition of Swedenborg's scientific works having been temporarily postponed with the consent of Professor Gustaf Retzius until such time as the editor will again be able personally to continue that work. Again thanking all corporations and individuals for redoubled help and support received since last February, I remain,

Very sincerely,

ALFRED H. STROH.

Mösseberg's Sanatorium,

Westrogothia, Sweden, October 22nd, 1914.

Annual Report, 1914—1915, with Documents.

An Appeal to the Swedenborg Scientific Association and New Church Printing Societies on behalf of the Work in Sweden.

The purpose of the present Appeal is to explain the condition of the Work in Sweden, organized in 1902 to publish the manuscripts of Swedenborg, and to arouse interest in the support of old and new projects. Previous reports, from 1902 to 1912, may be consulted in *The Swedenborg Archives*, Part I., printed in 1912. Part II. is in press and will contain supplementary reports and documents.

Due to the initiative of the Swedenborg Scientific Association and American New Church bodies known as the Academy of the New Church and General Convention of the New Jerusalem, the writer of the present Appeal was sent to Sweden in the year 1902, and subsequently for the whole period up to date, with few intermissions, has acted as the representative abroad of the Association and of the American and British New Church bodies and printing societies in editing Swedenborg's works in Sweden. The chief results of the project have been summarized by Dr. Frank Sewall, President of the Swedenborg Scientific Association, in the Annual Address published in *The New Philosophy*, the quarterly bulletin of the Association.

Beginning with the foundation of the Swedenborg Scientific Association in 1898 and of the Swedenborg Committee of the Royal Swedish Academy of Sciences in 1902 after the writer's arrival in Sweden, the Swedenborg Wave rose higher and higher, the great revival of interest culminating in the International Swedenborg Congress held under the auspices of the Swedenborg Society in London, in July, 1910, and in the Unveiling of Swedenborg's Sarcophagus in the Cathedral of Upsala by the King of Sweden in November, 1910. The only consecutive and detailed account of the whole movement since 1902 ever published is contained in *The Swedenborg Archives*, a serial planned to contain the history and results of the work in Sweden.

In 1910, after the Congress, and up to the present time, the American Swedenborg Printing and Publishing Society of New York, and the Rotch Trustees of Boston, joined in the work in Sweden, and later the Conference of the New Church also voted annual subscriptions. In brief, the policy inaugurated in 1902 carried everything before it, sometimes inspiring great enthusiasm and hearty interest and overcoming strong opposition in the annual meetings of the New

Church corporations. Today no one will deny that the remarkable events and publications produced or inspired by the movement are of permanent value and of great intrinsic significance in the study of Swedenborg, in the understanding of his great genius, in the honoring of his memory.

The results attained have cost much energy, labor, and money, and this has been increasingly true year after year. The editor in Sweden had just recovered from a severe nervous breakdown when the great world war broke out in all its vehement fury. The temple of Mars has been open far longer than at first expected, and who can say what the ultimate effect of the ruinous destruction will be upon the higher culture of Europe and the world, and upon the world of science and letters. At first the work in Sweden on Swedenborg's works, in hand since 1902, suffered in no way, but the conditions in England have now become so unfavorable that the leaders of the Swedenborg Society and Conference despair of finding new funds next year for the continuation of the work which has been so faithfully and liberally supported for a number of years. This condition has been reflected in meetings and in reports and letters of the present year. And during my visit in London in September I had an opportunity of learning the facts directly and of discussing the situation fully with the officials of the Swedenborg Society. In agreement with them I returned to Sweden instead of proceeding at once to America, but in order to prevent possible delays and future difficulties after January first I deem it advisable to proceed to America in November, visiting the leaders of the American societies at Bryn Athyn, New York and Boston, in order to explain present conditions and to present personally for their consideration certain new plans. Preliminary information in writing is accessible in my annual and monthly reports, and in the present Appeal.

The *first question* is that of time and expense necessary for the phototyping scheduled in 1910. No exact estimates were submitted at the meeting of representatives in London on July 11th, 1910, nor was this done until this year, when the increasing debt made it imperative. But in 1914 after visiting Sweden and inspecting the work during the editor's illness, the secretary of the Swedenborg Society stated in the Council's report for the Annual Meeting, printed in the Society's Annual Report, that the work of phototyping was in progress and would be finished in 1916. That was also according to the editor's calculation in 1913, as may be seen from the appended unpublished article entitled "The Phototyping of Swedenborg's Manuscripts". (*Appendix*, N:o 1.) The great acceleration of speed from

time to time produced larger bills per quarter, resulting in a large debt in the spring of this year, and involving at the present rate of production the sum of 2 000 Pounds for printing and binding by July, 1916, exclusive of the editor's salary. The facts relating to the phototyping expenses have been communicated hitherto in reports and letters from Sweden and England, so that all societies concerned are fully aware of the situation.

The second question is the continuation of the work, including the editor's grants as before since 1902. This point has been raised in recent editorial reports and in the correspondence. Another 5 or 6 volmes folio of phototypes would reproduce the remainder of Swedenborg's MSS. and documents of theological, philosophical, scientific and miscellaneous content. Such a result would be of very great value for present study and future times. In case of devastating war these priceless records might be destroyed. It would be easy to repeat here the reasons advanced in the past for reproducing Swedenborg's MSS., but only the ignorant or prejudiced would any longer attempt to deny the congency of previous arguments in favor of such work. There are strong reasons for undertaking this work now, for the printing establishment of Lagrelius & Westphal is ready to continue, in fact they would otherwise be greatly inconvenienced, having their arrangements perfected especially for this work. The editor's income moreover, even for the editing of the scientific works and documents, is dependent on the quarterly grants received regularly since 1902 up to the present year. The condition of politics or business in England ought not to hamper the work in Sweden permanently or lead to its cessation. It was always understood that the editorial grants were to cover not only the phototyping but also the scientific editing for the Academy of Sciences. In order to supply information showing how the editor's income may be slightly increased after his becoming a Swedish citizen and settling at Upsala this year, two documents from the printing firm Lagrelius and Westphal (*Appendix*, No. 2) and the Royal Swedish Academy of Sciences (*Appendix*, No. 3) are appended. The gist of their contents is that in case of future phototyping and scientific volumes the editor will receive a small percentage, nothing having ever been received for this work from Swedish sources.

The Appeal has hitherto dealt with the phototyping and the editor's grants. I now turn to the question of the scientific editions and their editing. The strongest impulse for publishing the scientific works of Swedenborg came originally from the Swedenborg Scientific Association after a few years of preliminary activity from 1898 to 1902. A number of treatises were published by the Association, and simul-

taneously the editor was appointed by the Swedenborg Committee of the Royal Swedish Academy of Sciences to edit the Stockholm series of texts. The Association and Academy have published several volumes of translations and texts and the two lines of work are still in progress and laden with great possibilities. The history of the Association's labors is accessible in its quarterly publication *The New Philosophy*. The minutes of the Swedenborg Committee of the Royal Swedish Academy of Sciences are here appended (*Appendix*, No. 4), and will be translated and discussed in *The Swedenborg Archives*, Part II., together with the other documents. The Committee, in concluding their labors, leave the editing of the series in the hands of the writer, which was endorsed by the Academy at a regular meeting on the 26th of May (*Appendix*, No. 3). Having issued numerous translations in America and many texts in Swedish and Latin at Stockholm and Upsala, the editor hopes that the foreign societies will as before support the editing so that the whole scheme can be carried through to a successful conclusion. I desire to finish the series of *Treatises* begun some years ago for the Swedenborg Scientific Association, and also to edit for the Academy of Sciences the Stockholm edition, and for the Swedenborg Society, with Professor O. M. Ramström, the third and fourth volumes of *The Brain*. Arrangements for the payment of expenses may be made with the treasurers of the Swedenborg Society and of the Royal Swedish Academy of Sciences which has a special Swedenborg Fund, or directly with the editor.

Besides the phototyping work and scientific editing there is a third line of work which has gone forward from time to time, namely, the listing and copying of miscellaneous documents by and concerning Swedenborg. The work in Sweden, including the work on *Chronological List* and the accounts, may be studied further in the complete Annual Report for 1914—15 here appended with audited statement of itemized expenses (*Appendix*, No. 5).

Hoping that this *Appeal* and the story of the work in Sweden in *The Swedenborg Archives* will lead to the further development of an important use, I remain,

Faithfully yours,

ALFRED H. STROH.

Upsala, Sweden, Vasagatan 1 C,
November 1st, 1915.

Appendix, No. 1.

The phototyping of Swedenborg's Manuscripts.

At the meeting of the General Conference of the New Church held last June in Manchester the Conference joined the Swedenborg Society and the American Societies in supporting, financially, the phototyping of Swedenborg's theological manuscripts at Stockholm. This exceedingly important but expensive work is therefore now being supported by the united efforts of nearly all British and American corporations interested in the publication of Swedenborg's works.

Readers of *Morning Light* will find in the issues for November 15 and 22 a general historical account of the reproduction of Swedenborg's manuscripts, from the pen of Mr. Charles Higham, reprinted from *Notes and Queries*, October 18 and 25. The present contribution to the *New Church Magazine* will supply additional information respecting the existing state of the phototyping and plans for the future.

From the following "Table indicating Swedenborg's Manuscripts hitherto phototyped" it will be seen that a grand total of 7 169 folio pages has been reached, including such large manuscripts as the *Spiritual Diary*, *Bible Index* and *Adversaria* or "*Explanations of the Word*". The phototyping of the *Arcana* and of a volume of Miscellaneous Theological Works is in progress. From the "Estimate of time required to complete the phototyping" it will be seen that at the rate of five volumes every three years the manuscripts of the *Apocalypse Explained* and of the Index to the *Apocalypse Revealed* will be phototyped by 1920. Finally, in the "Proposed Contents of *Miscellanea Theologica*". I have furnished a preliminary list of the smaller works and fragments of theological content which will supply the basis for new texts of those items.

I. Table indicating Swedenborg's Manuscripts hitherto phototyped.

Titles.	Pages.	Printed at expense of.
Summaria Sensus Interni Librorum Propheticorum et Psalmorum Davidis . . Phototyped at Stockholm and published at Philadelphia, 1896.	25	Academy of the New Church.

Titles.	Pages.	Printed at expense of.
Memorabilia seu Diarium Spirituale 1747—1765		Convention & Academy, and the Swedenborg Society & Conference cooperating.
Stockholm, Vol. I. 1901	565	
Vol. II. 1905	550	
Vol. III. 1905	691	
Distributed 1907.		
Index Biblicus		Swedenborg Society.
Printed and to be published at Stockholm.		
Vol. I. 1913	719	
Vol. II. 1913	675	
Vol. III. 1913	646	
Miscellanea Theologica	54	Academy & Convention (1903) and other bodies (1910).
Remainder in press and to be published at Stockholm.		
Swedenborgiana. Part I	86	New Church Publishing Society, Stockholm.
2. copies of edition published in 1910 at Stockholm.		
Explicationes in Verbum seu Adversaria		United Societies.
Vol. I. 1914	727	
Vol. II. 1914	601	
Vol. III. 1914	799	
Printed and to be published at Stockholm.		
Arcana Coelestia		United Societies.
Vol. I. printed	545	
In press Vol. II.	486	
Total number of folio pages	7169	

II. Estimate of time required to complete the phototyping.

1910—1913 *5 Volumes.*
1 Miscellaneous Additions to *Index Biblicus.*
3 *Explicationes in Verbum seu Adversaria.*
2 *Arcana Coelestia*, and second volume in press.

1913—1916 *5 Volumes.*
4 *Arcana Coelestia.*
1 *Miscellanea Theologica.* (For detailed information concerning this volume see below).

By reason of increased appropriations of over one-third *per annum*, the work would be greatly accelerated during these years and the works below finished by 1916.[1]

1916—1920 *5 Volumes.*
3 Volumes *Apocalypsis Explicata.*
1 *Index to Apocalypsis Revelata.*
1 Swedenborg's *Bibles.* (If found desirable, Swedenborg's Latin and Hebrew Bibles, 4 vols, quarto, containing his annotations, might be issued as one folio volume.)

Also Various theological and scientific MSS. and rarities if found desirable, completing the work of reproducing such works and fragments as would remain inaccessible after the phototyping of the larger works.

III. Proposed Contents of Miscellanea Theologica.

		Year.
1.	*De Conjugio.* Codex 14 (Hyde's Biblography, No. 2370) .	1766
2.	*Annotata de Calvino* (Hyde's Bibliography, No. 2473) . .	1769
3.	*Additiones ad Veram Christianam Religionem* (Hyde's Bibliography, No. 2715)	1770

The above MSS. were phototyped ten years ago and fill 54 pages folio of the usual size.

Proposed continuation.

4.	*De Gade et Aschere*, a fragment of Swedenborg's *Memorabilia*, at Bath (Hyde's Bibliography, No. 498)	1747
5.	*Errata in De Telluribus in Munde nostro Solari*, MS. (Hyde's Bibliography, No. 956)	1758
6.	*Contents and Errata Typographica* in *De Cœlo et Inferno*, MSS. (Hyde's Bibliography, No. 1002)	1758

[1] The *Bibles* and many items mentioned below for the volume of Miscellaneous Theological Works were subsequently excluded in order to save expense. — A. H. S. Nov. 1st, 1915.

Year.

7. *MS. Errata Typographica of De Ultimo Judicio, et de Babylonia Destructa* (Hyde's Bibliography, No. 1166) . . 1758
8. *MS. Errata Typographica of De Nova Hierosolyma et sjus Doctrina Cœlesti* (Hyde's Bibliography, No. 1210) . 1758
9. *De Athanasii Symbolo* (Hyde's Bibliography, No. 1516) . 1760
10. *De Domino* (Hyde's Bibliography, No. 1527) 1760
11. *Quinque Memorabilia* (Hyde's Bibliography, No. 2364) . . 1766
12. *Canones Novae Ecclesiae* (Hyde's Bibliography, No.2513) . 1769
13. *Appendix ad Codicillum de Equo Albo* (Hyde's Bibliography, No. 2688) 1769
14. *Index to the Formula Concordæ*, codex 47 (Hyde's Bibliography, No. 2714) 1769
15. *Swedenborg's Reply to Cuno*, Royal Library, Brussels . . . 1769
16. *Reply to Ernesti*, Thysian Library, Leyden (Hyde's Bibliographia, No. 2899) 1771
17. *Coronis seu Appendix ad Veram Christianam Religionem* (Hyde's Bibliography, No. 2918) 1771
18. *De Consummatione Sæculi* (Hyde's Bibliography, No. 2953) 1771

Further Additions.

19. *Invitation to the New Church* (Hyde's Bibliography, No. 2961) 1772
20. *Coronis MS. at Helsingfors* (An old copy recently found at Helsingfors, Finland, among the Nordenskiöld family papers).
21. *Sketch of Ecclestiastical History.*
22. *Concerning Faith in Christ.*
23. *Faith and Good Works.*
24. *Hieroglyphic Key.*
25. *Varia Theologica* from Vol. III. of Photolithographs.
26. *Possibly Swedenborg's Dreams.*

Copies of certain theological manuscripts printed by Dr. I. Tafel and others, the originals of which are lost, will be included; also any other short miscellaneous fragments of a theological nature and all theological memorials and letters by Swedenborg.

Stockholm, November, 1913.

ALFRED H. STROH.

Appendix, No. 2.

Emellan undertecknade mr Alfr. Stroh och Aktiebolaget Lagrelius & Westphal har denna dag följande öfverenskommelse träffats:

1. Jag Alfr. Stroh anträder före den 1 september 1915 en resa till England och Amerika med ändamål att skaffa för Aktiebolaget Lagrelius & Westphal en beställning på reproducerande i ljustryck af sex folio band af Swedenborgs handskrifter om tillsammans på en 1 000 blad å 4 sidor, nämligen: 2 band Swedenborgs biblar och teologiska skrifter, 2 band filosofiska handskrifter jämte De Genuina Metallorum Tractatione och Swedenborgs anteckningsböcker samt 2 band bref memorial och blandade papper. — Reproducerandet sker under herr Ch. Westphals ledning på samma sätt som de förut hos ofvanstående firma beställda ljustryck af Svedenborgs skrifter i en upplaga av 110 exemplar och till ett pris af femtio (50) kronor pr ark (om 4 sidor) (110 ex. plus 5 öfverark) exklusive papper samt dessutom 70 öre pr ark för transport från och till Vetenskapsakademien af originalskrifterna.

Beställningen öfverlämnas till Lagrelius & Westphal så att med tryckningen kan börjas omkring den 1 april 1916.

2. Aktiebolaget Lagrelius & Westphal förbinder sig att, då ofvannämnda beställning till dem öfverlämnas, godtgöra mr Alfr. Stroh för sina resor och omkostnader med fyra (4) procent af det belopp, som Lagrelius & Westphal får för tryckningen (50 kr. per upplaga af 1 ark om 4 sidor), hvilket utbetalas till mr Alfr. Stroh i den mån som likvid för arbetet inflyter.

Stockholm den 16 augusti 1915.

Ljustryckeriaktiebolaget Lagrelius & Westphal.

ALFRED STROH. CHR. WESTPHAL.

Upprättade i tvenne exemplar.

Appendix, No. 3.

Utdrag af protokoll, hållet hos Kungl. Vetenskapsakademien i Stockholm den 26 maj 1915.

§ 7. Kungl. Vetenskapsakademiens kommitté för utgifvande af viktigare arbeten af Emanuel Swedenborg, under hvars inseende tre delar af »Opera quaedam de rebus naturalibus», blifvit utgifna, hade i en till akademien inlämnad skrift föreslagit, att kommitténs hittillsvarande sekreterare mr Alfred H. Stroh måtte erhålla uppdrag att fortsätta den redaktionella verksamheten med utgifvande af de följande delarna av detta verk mot ett honorar, beräknadt efter tjugu kronor för tryckark, samt att dessa delars utgifvande skulle så långt möjligt vore få bekostas af de till akademien genom verkets försäljning influtna och inflytande medlen.

På hemställan af förvaltningsutskottet, hvars yttrande i detta ärende inhämtats, fann akademien skäligt besluta i öfverensstämmelse med det framlagda förslaget, men därvid tillägga, att åtgärd icke finge vidtagas för sättning af någon del, förrän redaktören underställt akademiens sekreterare ekonomisk plan för delens utgifvande, och denna plan vunnit sekreterarens eller, där han funne sådant erforderligt, akademiens godkännande.

I nyssnämnda skrifvelse hade kommittén vidare föreslagit:

att 4:e och följande delar af arbetet ej skulle utgifvas i större upplaga än femhundra exemplar,

att mr Stroh, som ej af akademien begärt eller erhållit ersättning för sitt arbete med afseende å redan utgifna delar, måtte såsom gåfva af akademien erhålla femhundra exemplar af de i separat tryckta inledande artiklarna till dessa delar äfvensom af »Dædalus hyperboreus» och få tillstånd att låta införa dessa skrifter i den af honom utgifna nya serien »The Swedenborg Archives»; samt slutligen

att akademien måtte mottaga i sitt förvar kommitténs protokoll med bilagor.

Äfven dessa förslag hade tillstyrkts af förvaltningsutskottet, och de blefvo nu af akademien godkända.

In fidem
E. W. Willers.

Appendix, No. 4.

Justeradt
d. 4 april 1903
G. Retzius.

Protokoll hållet vid sammanträde af den af K. Vetenskapsakademien utsedda särskilda Swedenborgskommittén.

Den 14 februari 1903 sammanträdde den särskilda kommitté, som K. Vetenskapsakademien den 11 december 1902 tillsatt med uppdrag att utreda i hvad mån Emanuel Swedenborgs i Akademiens bibliotek befintliga manuskript och öfriga litterära kvarlåtenskap af vetenskapligt innehåll borde befordras till trycket. Kommitténs sammanträde ägde rum i K. Vetenskapsakademiens bibliotek. *Närvarande* voro kommitténs samtliga ledamöter, hrr Chr. Lovén, Retzius, Nathorst, Henschen och Arrhenius, äfvensom Swedenborgsforskaren herr Alfred Stroh, som benäget lofvat att gå kommittén tillhanda med upplysningar angående Swedenborgs skrifter, de utgifna såväl som de outgifna.

§ 1.

Till ordförande utsågs herr Retzius.

§ 2.

Sedan en öfverblick tagits öfver den ifrågavarande i Akademiens bibliotek förvarade litterära kvarlåtenskapen af vetenskapligt innehåll, såväl de under förf:s lifstid och efter hans död, dels i tryck, dels på fotografisk väg utgifna arbetena som ock de viktigare ännu outgifna manuskripterna, beslöt kommittén att åt sina särskilda medlemmar uppdraga att hvar och en inom sitt fack söka granska dessa skrifter och afgifva yttrande om deras betydelse med hänsyn till frågan om eventuellt utgifvande i tryck.

Herr Arrhenius åtog sig sålunda att granska de skrifter af Swedenborg, som kunna hänföra sig till fysik och kemi och därmed sammanhörande vetenskapsgrenar. Åt herr Nathorst öfverlämnades granskningen af de skrifter, som höra till geologi, paleontologi och botanik. Hrr Lovén, Henschen och Retzius erhöllo uppdraget att granska de till anatomi och fysiologi hörande skrifter.

§ 3.

Då det, för att denna granskning skulle med framgång och utan alltför stora svårigheter utföras, vore nödigt att erhålla lättlästa afskrifter af de i original delvis mycket svårläsliga manuskripten, beslöt kommittén att söka anskaffa medel till afskrifning af de förnämsta manuskripten.

Herr Stroh meddelade härvid, att han af ett af de viktigare till fysikens område hörande manuskripten redan ägde en af honom reviderad afskrift, som han ville ställa till kommitténs förfogande för den händelse att tryckning däraf skulle beslutas. Även meddelade herr Stroh, att han erfarit, att i Amerika funnes en afskrift af det förnämsta af de ännu outgifna manuskripten som afhandla hjärnan, och erbjöd han sig att söka få från Amerika låna denna afskrift för kommitténs räkning, hvarjämte han erbjöd sig att, om afskriften kunde sålunda erhållas till låns, kollationera den med manuskriptet och revidera den.

På grund af dessa upplysningar och anbud beslöt kommittén att icke nu fatta beslut om eventuell afskrifning af det ifrågavarande manuskriptet om hjärnan, utan att antaga herr Strohs erbjudande att i Amerika efterhöra den omnämnda afskriften äfvensom att söka få låna den till Stockholm.

In fidem
G. Retzius.

Justeradt
d. 3 okt. 1906
G. Retzius.

Protokoll hållet vid sammanträde af Swedenborgskommittén den 4 april 1903.

Närvarande: Hrr Retzius, Nathorst och Arrhenius hvarjämte herr Stroh gick kommittén til handa med upplysningar.

§ 1.

Protokollet för sammanträdet den 14 februari justerades.

§ 2.

Herr Lovén hade anmält förhinder på grund af sjuklighet och förestående bortresa. Herr Henschen hade redan afrest till utlandet.

§ 3.

Anmäldes att styrelsen för Lars Hiertas Minne anslagit 700 kr. till afskrifning af Swedenborgska manuskript, hvilka medel ställts till kommitténs förfogande.

§ 4.

Herr Stroh meddelade att han för några dagar sedan från Amerika fått upplysning om att afskriften af manuskripten öfver hjärnan funnos i behåll och att löfte därifrån gifvits att de skulle hitsändas och ställas till kommitténs förfogande för att eventuellt användas för tryckning. Kommittén beslöt därför att invänta denna afskrifts hitkomst, innan något vidare åtgjordes i denna fråga.

§ 5.

Kommittén beslöt att låta afskrifva en i manuskriptet förefintlig *index* öfver Swedenborgs skrifter (förf. af Swedenborg själf) äfvensom ock en del andra smärre skrifter.

§ 6.

Kommittén beslöt att föreslå Akademien att låta först utgifva i tryck det i § 3 i protokollet för den 14 februari omnämnda manuskript, som afhandlade fysiska ämnen och som herr Stroh ställt till kommitténs förfogande. Enligt herr Strohs beräkning skulle det, tryckt i vanligt oktavformat, icke upptaga mer än 10—12 ark. Herr Retzius lofvade att ansvara för tryckkostnaderna för 1:a volymen och herr Arrhenius att granska korrekturet samt förse arbetet med nödiga noter. Herr Stroh erbjöd sig ock att bistå vid granskning af korrektur och kollationera med manuskriptet. Kommittén ansåg lämpligt, att detta arbete försåges med en allmän sammeltitel på latin, som angåfve att den ifrågavarande serien, hvars första del skulle utgöras af denna skrift, utgjorde utvalda, dels outgifna, dels i bokhandeln alldeles utgångna arbeten af Em. Swedenborg, äfvensom att serien utkomme under Svenska Vetenskapsakademiens hägn.

In fidem

Gustaf Retzius.

Justeradt
d. 31 maj 1910
G. Retzius.

Protokoll hållet vid sammanträde af Vetenskapsakademiens Swedenborgskommité den 3 Oktober 1906.

Närvarande: Hrr proff. Nathorst, Henschen, Arrhenius och Retzius, äfvensom herr Alfred H. Stroh.

§ 1.

Anmäldes att sedan förra sammanträdet prof. Chr. Lovén aflidit.

§ 2.

Protokollet för sammanträdet den 4 april 1903 justerades.

§ 3.

Ordföranden prof. Retzius framhöll, att han icke velat besvära ledamöterna med något sammanträde under den sedan den 4 april 1903 förgångna tiden, då det därunder endast gällt utförandet af därvid fattade beslut och då ledamöterna enskildt sinsemellan kunnat diskutera föreliggande frågor. Tryckningen af de Swedenborgs skrifter, som vid nämnda sammanträde beslöts, har af flera skäl försiggått långsamt, dels emedan en hel del svårigheter med anskaffande af afskrifter förelegat, dels och synnerligen därför att mr Stroh, som närmast öfvervakat korrekturläsning, tryckning m. m., under de senaste åren vistats i Amerika, hvarför korrekturen måst skickas till honom och åter. Men då hufvudsaken vore, att få arbetet väl utfördt och ingen särskild brådska förefunnes, så att tryckningen borde vara afslutad på viss tid, så hade man icke sökt forcera tryckningen. Nu hade emellertid under sommaren (i juli d. å.) mr Stroh åter anländt till Stockholm för att stanna kvar här under de närmaste åren. Och han hade förklarat sig villig att använda en betydlig del af sin tid på fullföljande af utgifvandet af Swedenborgs skrifter. Det vore därför mycket önskvärdt, att detta kunde ostördt fortgå. Det hade af flera skäl visat sig nödigt att fördela de skrifter af geologiskt, kemiskt och kosmologiskt innehåll, som man ansett böra tryckas, på trenne skilda delar, en för hvart och ett af dessa ämnen och i angifna följd. Tryckningen af dessa tre delar vore nu så långt avancerad, att de torde kunna vara färdiga inom årets slut. Tillsammans komme de att omfatta ungefär 75 ark. Till den första volymen (*geologiska* skrifter),

som vore nära färdigtryckt, hade prof. Nathorst författat en inledning om Swedenborg såsom geolog, hvilken afhandling nu förelåg tryckt på svenska språket i Geologiska Föreningens förhandlingar och var under öfversättning till engelska af mr Stroh för att införas i början af vol. I. Till vol. II, skrifter af *kemiskt* innehåll, behöfdes en inledning, och hemställde herr Retzius, att herr Arrhenius ville hafva godheten författa en sådan. Till vol. III (skrifter af *kosmologiskt* innehåll) hade hr Arrhenius redan haft godheten åtaga sig att skrifva en inledning, och vore denna under arbete. Hr Retzius bad att å kommitterades vägnar få uttala ett varmt tack till hrr Nathorst och Arrhenius för det besvär de gjort sig med författandet af dessa inledningar, genom hvilka kännedomen om Swedenborgs åskådning och upptäckter på de ifrågavarande områdena så väsentligt främjades.

Efter fullbordandet af tryckningen af de nämnda tre volymerna återstode emellertid alla skrifterna i *anatomi* och *fysiologi*, framför allt de som beträffa hjärnan och nervsystemet. I dessa ämnen förefinnas flera redan förut tryckta, men nu ytterst sällsynta verk af Swedenborg, men därjämte flera manuskripter från olika tidsperioder. Af de viktigare bland de senare hade för kommitténs räkning tagits afskrifter, hvarjämte genom mr Strohs vänliga bemedling den i protokollen för sammanträdena den 14 februari och den 4 april omnämnda, vid Urbana University i Ohio befintliga afskriften af ett större sådant manuskript erhållits till lån i och för eventuell tryckning. Efter en ungefärlig beräkning skulle de delar, som afhandla anatomi och fysiologi, kunna antagas belöpa sig till 100 ark. Herr Retzius hade tänkt, att man skulle kunna vänta någon tid med utgifvandet af dessa delar, men då nu mr Stroh hitkommit och förklarat sig beredd att ägna sin tid åt detta arbete, och då mr Strohs bistånd härvid vore mycket värdefullt, eftersom han f. n. bättre än någon annan vore förtrogen med Swedenborgs skrifter och manuskripter samt väl förstode hans latin och hans stil, så vore det högeligen önskvärdt, att möjlighet bereddes för detta ändamål.

Herr Retzius hade från början utlofvat att bekosta tryckning af vol. I, och stiftelsen Lars Hiertas Minne hade ställt 700 kr. till Vetenskapsakademiens förfogande för afskrifning af manuskripten. Vid hopsummering af de utgifter, som erfordrats för afskrifning ensam, belöpte sig dessa redan till 1,729 kr. 25 öre, hvarjämte för korrekturläsning utbetalats kr. 673: 80, för utförande af några afbildningar i texten 81 kr. och för räkningar från tryckeriet intill detta års början kr. 4,127: 30, hvadan utgifterna hittills uppgått till 6,611 kr. 35 öre; härtill kom ytterligare en utgift af 100 kr., alltså tillsammans kr. 6,711: 35. Om härifrån afdrages anslaget från stiftelsen Lars Hiertas

Minne, återstode en utgift af kr. 6,011: 35. Härtill komme utgifterna för tryckning och korrekturläsning m. m. för innevarande år, hvilka finge beräknas till 2,000 à 3,000 kr., hvadan hela utgiftsbeloppet då stege till omkring 9,000 kr. Herr Retzius förklarade sig villig bekosta tryckningen äfven af vol. II och III. Det gällde emellertid nu att erhålla medel till tryckningen af de öfriga, följande volymerna. Han önskade därför höra kommitterades mening angående ett förslag att nu vända sig till Vetenskapsakademien i denna fråga och erbjöd sig att vid Förvaltningsutskottets sammanträde den 5:e dennes, då Akademiens budgetförslag skulle behandlas, göra yrkande på, att, om möjlighet förefunnes, få äfven anslag för fortsatt utgifvande af Swedenborgs skrifter upptaget i budgetförslaget. Enär man approximativt kunde beräkna, att kostnaderna för de återstående volymerna skulle belöpa sig till minst samma belopp som kostnaderna för vol. I—III och man borde kunna hoppas, att genom försäljning af dessa ett belopp af omkring 3,000 kr. kunde återbekommas, skulle man behöfva omkring 6,000 kr. för tryckningen af de återstående volymerna. Herr Retzius föreslog därför, att man skulle för år 1907 anhålla om ett anslag af 2,000 kr. och därefter under de följande båda åren om ett liknande belopp. Kommittén gillade detta förslag.

§ 4.

Kommittén uppdrog åt sina i de beträffande särskilda facken sakkunniga ledamöter att i samråd med mr Stroh söka göra en utredning af hvad som borde ingå i de återstående volymerna, och detta äfven i anatomi, fysiologi och psykologi, så att, när tryckningen kunde företagas, en sådan utredning förelåge.

§ 5.

Kommittén uttryckte sin stora tacksamhet till professor Retzius för allt det bistånd, såväl i litterärt som särskildt ekonomiskt hänseende han hade gifvit kommittén.

In fidem
GUSTAF RETZIUS.

Justeradt
31/5 10.
Gustaf Retzius.
A. G. Nathorst.
S. E. Henschen.

Protokollet hållet vid sammanträde af Vetenskapsakademiens Swedenborgskommitté den 31 maj 1910.

Närvarande: Hrr Retzius, Nathorst och Henschen, äfvensom mr Alfred H. Stroh. Hrr Arrhenius och Müller hade anmält förhinder.

§ 1.

Föreslogs af professor Retzius, att mr Stroh utses till kommitténs sekreterare, hvilket förslag af kommittén godkändes.

§ 2.

Justerades protokollet af den 3 oktober 1906.

§ 3.

Ordföranden meddelade, att Akademiens förvaltningsutskott tillstyrkt Akademien och att Akademien beviljat ett anslag af 1,000 kronor, som upptogs i Akademiens budget för år 1907.

§ 4.

Uppläste sekreteraren följande redogörelse för de åtgärder, som vidtagits sedan föregående kommittésammanträde.

Efter några utvidgningar af delarna I och II, utkommo dessa i september 1907 och februari 1908. Vid framläggandet af nämnda två delar vid K. Vetenskapsakademiens sammanträden redogjorde Swedenborgskommitténs ordförande, professor Retzius, för arbetets utveckling och äfven för de åtgärder, som af kommittén vidtagits för Swedenborgs kvarlefvors hemförande till Sverige under perioden 1906 till 1908. Vid olika sammanträden af Akademien redogjordes äfven för de åtgärder, som af Akademien vidtagits med anledning af diskussionerna om nämnda kvarlefvors förflyttande till Uppsala domkyrka. Som bekant hamnade kvarlefvorna slutligen i Uppsala domkyrka, och Sveriges riksdag beviljade ett anslag af 10,000 kronor för en lämplig sarkofag.

Efter professor Christian Lovén, som aflidit, utsågs af Akademien till kommittémedlem professorn i anatomi vid Karolinska Institutet Erik Müller.

På sommaren 1908, efter det åtgärderna i Sverige hade väckt stort intresse i England och Amerikas Förenta stater, reste mr Stroh till England, och vid flera sammanträden med Swedenborg Societys Committee diskuterades vissa frågor angående Swedenborgsarbetet i Sverige. Swedenborg Society förklarade sig villig att köpa kontant 125 exemplar af hela serien af Akademiens Swedenborgsskrifter, om Swedenborgs *Opera Philosophica et Mineralia* medtoges i serien. Vid en framställning om arbetets fortgång i K. Vetenskapsakademien hösten 1908 redogjorde professor Retzius bland annat för nyssnämnda förslag. Det må även tilläggas, att ungefär 350 exemplar af de första tre delarna af Swedenborgsskrifterna hafva subskriberats, hvarjämte efter förslag af Akademiens bibliotekarie, d:r J. A. Bergstedt, omkring 50 exemplar hafva skänkts, dels till olika bibliotek i in- och utlandet, dels till flera institutioner och enskilda intresserade forskare. Det är i hög grad önskvärdt, att följande delar tryckas i en upplaga af åtminstone 1,000 exemplar, detta desto mera som ett betydligt större belopp än man hade vågat hoppas redan influtit genom försäljningen af de två utgifna delarna.

Hvad nu del III angår, är den nästan färdigtryckt med följande titel: *Miscellanea de Rebus Naturalibus.* Mr Stroh har för denna del utarbetat en inledning: »The Sources and Development of Swedenborg's Early Philosophy of Nature». Om denna inledning användes för del III, skulle professor Nils Dunér, som förklarat sig därtill vara villig, författa inledningen för del IV, innehållande *Daedalus Hyperboreus* m. m. angående K. Vetenskapssocietetens tidigaste historia. Då K. Vetenskapssocieteten förklarat sig villig att såsom en festskrift vid dess 200-årsjubileum i november detta år utgifva *Daedalus* i särtryck, efter det att en faksimileupplaga förut utgifvits i K. Vetenskapsakademiens serie del IV, hafva de nödvändiga förberedelserna satts i gång.

Då den internationella Swedenborgskongress, som sammanträder i London den 4—8 juli, kommer att ännu mera än hittills sprida glans öfver Swedenborgs namn och lifsgärning, samt leda till en sann uppskattning af hans skrifter, är det synnerligen glädjande, att Sverige kommer att blifva väl representeradt genom flera af dess vetenskapsmän från Stockholm och Uppsala. Allt tyder på att de mycket intressanta resultat, som i nyaste tider vunnits af professorerna Ramström, Hammar och Neuburger, komma att ännu mera öka intresset för Akademiens serie af Swedenborgsskrifter, så att arbetet förmodligen kan till stor del bära sig äfven i finansiellt afseende.

§ 5.

Upplästes följande af mr Stroh uppgjorda förslag till innehåll af K. Vetenskapsakademiens Swedenborgsskrifter:

Del	I	innehåller	*Geologica et Epistolae* med en *Appendix.*
»	II	»	*Cosmologica.*
»	III	»	*Miscellanea de Rebus Naturalibus.*
»	IV	»	*Daedalus Hyperboreus et Varia ex annis 1716—1722.*
»	V	»	*Principia Rerum Naturalium* } *Opera Philosophica et Mineralia.*
»	VI	»	*De Ferro.* } *Opera Philosophica et Mineralia.*
»	VII	»	*De Cupro.* } *Opera Philosophica et Mineralia.*
»	VIII	»	*Varia Anatomica, Physiologica et Psychologica.*
»	IX	»	*Oeconomia Regni Animalis.*
»	X	»	*De Cerebro.*
»	XI	»	*De Morbis Cerebri.*
»	XII	»	*Regnum Animale cum indicibus et notis historicis criticisque totius seriei.*

§ 6.

De i §§ 4 och 5 framställda förslagen godkändes af kommittén i följande ordning:

a) Beslöts att föreslå Akademien, att f. o. m. del IV öka upplagan till 1,000 exemplar.

b) Beslöts tillstyrka Akademien, att, såsom föreslagits, i del IV intaga *Daedalus Hyperboreus* i faksimiltryck samt att medgifva K. Vetenskapssocieteten i Uppsala rätt att af omnämnda *Daedalus* låta taga det antal särtryck, som Societeten önskar utgifva som en festskrift vid dess 200-årsjubileum.

c) Antogos herrar Strohs och Dunérs anbud att författa hvar sin inledning till delarna III och IV.

d) Angående förslaget att i upplagan intaga Swedenborgs *Opera Philosophica et Mineralia* beslöts att tillstyrka Akademien, att, för så vidt medlen medgifva, reproducera i litografiskt faksimil de tre delarna af detta verk i något förminskad skala så att detsamma kan ingå i skriftseriens format, hvarjämte från Swedenborg Society skulle anhållas om skriftlig försäkran om giltigheten af det anbud å subskription af 125 exemplar af hela serien, som detta sällskap enligt meddelandet i § 4 förklarat sig villig förbinda sig till om *Opera Philosophica et Mineralia* intoges i serien.

e) Med afseende å § 5 godkändes tills vidare ordningsföljden för utgifvandet af de återstående skrifterna.

§ 7.

Professor Henschen meddelade, att han antoge den inbjudning, han såsom medlem af Akademiens Swedenborgskommitté mottagit från Swedenborg Society till den stundande Internationella Swedenborgskongressen i London, och anhöll han, att å kommittéledamöternas vägnar få framföra en hälsning till Kongressen, samt att om möjligt till Swedenborg Society i London å kommitterades vägnar få öfverlämna en kopia af det å Gripsholms slott förvarade Swedenborgsporträttet af Pehr Krafft d. ä., och erbjöd sig professor Retzius att bidraga till denna kopia med hälften af kostnaden, hvarjämte professor Henschen förklarade sig villig att anskaffa den återstod af beloppet, som ej eljest kunde anskaffas.

In fidem
ALFRED H. STROH.

Justeras
G. Retzius
A. G. Nathorst
E. Müller
S. E. Henschen

Protokoll hållet vid sammanträde af Vetenskapsakademiens Swedenborgskommitté den 1 april 1911.

Närvarande: Herrar Retzius, Nathorst, Henschen och Müller, äfvensom herr Stroh, kommitténs sekreterare. Herr Arrhenius var frånvarande på grund af en utrikesresa till Boston, U. S. A.

§ 1.

Sekreteraren uppläste följande redogörelse för Swedenborgsarbetets utveckling sedan kommitténs föregående sammanträde den 31 maj 1910:

Vid Vetenskapsakademiens sammanträde den 8 juni 1910 redogjorde herr Retzius för kommitténs verksamhet och Swedenborgsarbetets utveckling, därvid kompletterande de redogörelser som vid föregående tillfällen lämnats. Akademien godkände kommitténs tillstyrkande att i del IV af *Opera Quaedam* intaga *Daedalus Hyperboreus* i faksimiltryck samt att medgiva K. Vetenskapssocieteten i Uppsala rätt att af omnämnda *Daedalus* låta taga det antal särtryck, som Societeten önskade utgifva som en festskrift vid dess 200-årsjubileum. Den 19 november utkom nämnda festskrift: *Kungl. Vetenskaps Societetens i*

Uppsala Tvåhundraårsminne MCMX, och då Akademien äfven godkänt kommitténs tilstyrkande, att f. o. m. del IV öka upplagan af *Opera Quaedam* till 1,000 exemplar, trycktes samtidigt *Daedalus* i nämnda antal för del IV.

Akademien godkände äfven förslaget, att del III, *Miscellanea de Rebus Naturalibus*, skulle förses med en inledning af herr Stroh, och del IV med dylik af professor Dunér, som förklarat sig vara därtill villig. Professor Dunérs arbete på svenska i K. Vetenskapssocietetens festskrift kommer delvis att göras tillgänglig äfven på engelska i inledningen till del IV. På detta sätt blifver mycket nytt af intresse för naturforskningens utveckling i Sverige under början af 1700-talet införlifvadt i del IV, i sammanhang med en redogörelse för Swedenborgs tidigaste naturvetenskapliga alster, och är det särdeles glädjande, att professor Dunér befunnits villig att författa inledningen.

Vid den internationella Swedenborgskongressen i London under juli 1910 voro flera svenska naturforskare närvarande. K. Vetenskapsakademiens representant var professor Einar Lönnberg, hvilken talade öfver Akademiens under gångna tider ådagalagda intresse för Swedenborgs naturvetenskapliga verksamhet och öfverlämnade fint bundna exemplar af *Opera Quaedam*, delarna I och II, jämte en festskrift: *A Chronological List of Swedenborg's Manuscripts and Printed Works, 1700—1772*. Detta arbete utkom äfven i Akademiens Årsbok för år 1910.

Professor S. E. Henschen framförde till Kongressen en hälsning från Vetenskapsakademiens Swedenborgskommitté och lämnade en öfverblick öfver denna kommittés verksamhet, samt skänkte från kommitténs ledamöter en kopia af Pehr Kraffts Swedenborgsporträtt, utfördt af artisten Jean Haagen. De bidrag för bekostandet af kopian, som lämnats af herrar Retzius, Henschen, Arrhenius, Jakob Eriksson, Hj. Sjögren och Stroh, äro antecknade på medföljande kvitto. Vid Kongressen redogjorde äfven professor Martin Ramström för de resultat, som vunnits i Uppsala af en kommitté, tillsatt af K. Vetenskapssocieteten för att utforska äktheten och tillståndet af Swedenborgs kvarlefvor, hvarvid öfverlämnades ett gipsaftryck af Swedenborgs hufvudskål äfvensom en Swedenborgsbyst af professor J. V. Hultkrantz, utförd med ledning af de rön, som vunnits vid granskningen af Swedenborgs hufvudskål. Vid aftäckandet af Swedenborgs sarkofag i Uppsala domkyrka och Vetenskapssocietetens 200-årsjubileum den 19 november 1910 utkom äfven ett arbete af professor Hultkrantz om de resultat, som vunnits af Societetens kommitté. Samma dag offentliggjordes ock i den af Uppsala universitet till K. Vetenskapssocieteten tillägnade festskriften ett arbete af professor Ramström: *Emanuel Swedenborg's*

Investigations in Natural Science and the basis for his statements concerning the functions of the brain. Professor Ramström, som äfven vid Kongressen i London hållit ett föredrag om Swedenborgs hjärnanatomiska forskningar, har förklarat sig villig att, om Vetenskapsakademien det önskar, författa en inledning till Swedenborgs MS. *De Cerebro*, hvilket enligt kommitténs protokoll af den 31 maj 1910 är ämnadt att utgöra del X af *Opera Quaedam*.

Det stigande intresse för Swedenborgs naturforskning och tidigare verksamhet, som väckts genom utgifvandet af *Opera Quedam*, Swedenborgs kvarlefvors hemförande till Sverige, den internationella Swedenborgskongressen i London, och högtidligheterna i Uppsala den 19 november, hafva visat sig på många sätt i Sverige och utlandet, i synnerhet sedan 1908. Utom Londonkongressens *Transactions*, ett digert, väl illustreradt band af stort värde för alla sidor af den nu återupplifvade Swedenborgsforskningen, hafva icke mindre än 12 Swedenborgsfestskrifter utkommit under år 1910. En förteckning å dessa bifogas. Dessutom har intresset visats genom bref från professor Max Neuburger i Wien till kommitténs ordförande och sekreterare, samt af Graf Karl Klinckowström i München till desamma, och af ingenjör A. Renier i Liège till professor A. G. Nathorst. På anmodan af professorerna Retzius och Nathorst har sekreteraren svarat på nämnda herrars förfrågningar enligt de här bifogade afskrifter.

Till Swedenborg Society i London och till Swedenborg Scientific Association och Academy of the New Church i Amerika har sekreteraren enligt kommitténs protokoll för den 31 maj 1910 skrifvit bref med anhållan, att nämnda sällskap måtte lämna skriftliga garantier för de subskriptioner, som äro nödvändiga för införlivandet i *Opera Quaedam* af *Opera Philosophica et Mineralia* i deras helhet, hvilket kommittén tillstyrkt Akademien.

Enär en del af det material, som var ämnadt att ingå i del III, för omfångets skull måste uteslutas, föreslås, att materialet i fråga, redan delvis satt, må kombineras med föreslagna del VIII och utgifvas i stället såsom del V med en inledning om Swedenborgs öfvergång från fysik och kosmologi till hans senare anatomiska och fysiologiska forskningar.

Vid Vetenskapsakademiens sammanträde den 8 mars 1911 redogjorde herr Retzius för Swedenborgsarbetets utveckling under det gångna året, samt lade på Akademiens bord del III af *Opera Quaedam*, jämte de 12 festskrifter, som utkommit under år 1910. Härmed hade herr Retzius fullgjort sitt löfte om bestridandet af kostnaden för de tre första delarna af dessa skrifter. Genom försäljningen af dem, hvilken

genom kommitténs sekreterares åtgärder i Amerika och England gått så väl, att ganska stora belopp influtit, vore utgifvandet af de närmast följande delarna betryggadt, hvarjämte Akademien i sin årsbudget upptagit ett belopp för bestridande af de vidare omkostnaderna.

§ 2.

Beslöts tillstyrka Akademien att såsom del V af *Opera Quaedam* utgifva en samling *Varia Cosmologica, Physiologica et Psychologica*, innehållande diverse mindre arbeten, som belysa Swedenborgs öfvergång från hans tidigare verksamhet inom det fysikaliska området till det organiska. Sekreterarens anbud att för denna del författa en inledning antogs med tacksamhet af kommittén, och beslöts att tillstyrka Akademien att antaga detta anbud.

§ 3.

Beslöts tillstyrka Akademien, att såsom del VI utgifva *Principia Rerum Naturalium* med en inledning af professor Peter Klason, som förklarat sig villig att författa en sådan.

§ 4.

Beslöts tillstyrka Akademien att anhålla, att professor Martin Ramström i anslutning till sina forskningar öfver Swedenborgs arbeten i hjärnans anatomi och fysiologi, med särskild hänsyn till den ifrågavarande vetenskapens historia, måtte författa en inledning till den del af *Opera Quaedam*, som kommer att innehålla Swedenborgs arbete *De Cerebro*.

§ 5.

Beslöts tillstyrka Akademien att anhålla, att professor S. E. Henschen ville åtaga sig att författa en inledning till den del af *Opera Quaedam*, som kommer att innehålla Swedenborgs arbete *De Morbis Cerebri*.

§ 6.

Enligt den uppfattning, som för närvarande inom kommittén är rådande, skulle anordningen af delarna i *Opera Quaedam* vara följande:

Del I. *Geologicā et Epistolae.*
» II. *Cosmologica.*
» III. *Miscellanea de Rebus Naturalibus.*
» IV. *Daedalus Hyperboreus* etc. Inledning af Professor Dunér.
» V. *Varia Cosmologica, Physiologica et Psychologica.* Inledning af herr Stroh.
» VI. *Principia Rerum Naturalium.* Inledning af professor Klason.
» VII. *De Ferro.*
» VIII. *De Cupro.*
» IX. *Oeconomia Regni Animalis* etc.
» X. *De Cerebro* etc. Inledning af professor Ramström.
» XI. *De Morbis Cerebri.* Inledning af professor Henschen.
» XII. *Regnum Animale* etc.

In fidem
ALFRED H. STROH.

Afskrift.

Till ledamöterna i den af K. Vetenskapsakademien den 11 december 1902 anordnade kommittén för utgifvande af viktigare vetenskapliga arbeten af Emanuel Swedenborg.

Enär den af K. Vetenskapsakademien år 1902 utsedda Swedenborgskommittén ännu icke hunnit vederbörligen afsluta sin verksamhet och därför må kunna anses ännu fungera, och enär kommitténs sekreterare herr Alfred H. Stroh, efter ett längre uppehåll i sitt arbete, som förorsakats dels af hans öfriga omfattande arbetsuppgifter, dels af hans nu lyckligen öfverståndna sjuklighet, åter är i tillfälle att fullfölja utgifvandet af det verk »Opera quaedam de rebus naturalibus», som af Akademien satts i gång och hvaraf trenne delar under åren 1907, 1908 och 1911 utkommit, men hvars fortsättning, sedan länge påbörjad, nu bör kunna oförtöfvadt verkställas, så anhåller undertecknad att för kommitténs ledamöter genom cirkulation förelägga följande *förslag* till bedömande och eventuellt till godkännande genom underskrift, för att därefter snarast möjligt underställas Akademiens beslut.

1. Kommittén beslöt den 11 maj 1910 att föreslå Akademien att från och med vol. IV öka upplagan af »Opera quaedam de rebus naturalibus» från 500 ex. till 1,000 ex., hvilket förslag af Akademien kort därefter godkändes. Detta beslut har hittills verkställts endast i afseende på aftryckningen af Daedalus hyperboreus, som afsetts att ingå i en af de närmast följande delarna. Detta beslut att sålunda

från och med IV volymen öka upplagan från 500 ex. till 1,000 ex. föranleddes däraf, att verket, särskildt till följd af dess redaktörs herr Strohs energiska åtgöranden, i England och Amerika erhållit en betydligt större åtgång än man förut kunnat förmoda, så att man befarade att upplagan af dessa delar icke skulle vara tillräcklig. Då det emellertid nu befunnits, att af densamma ännu återstå icke mindre än ungefär 100 ex. af hvardera och att någon afsevärd vidare försäljning af dem icke torde vara att förvänta, så synes det vara lämpligt att med afseende på upplagan af de följande delarna återgå till det antal af 500 ex., hvari de trenne första delarna blifvit tryckta. Och få vi sålunda hemställa om beslut härom.

2. Enär herr Stroh, utan någon ersättning från svensk institution, med synnerlig omsorg och sakkunskap handhaft *redaktionen* af de trenne första delarna af Opera quaedam och därjämte, såsom ofvan är antydt, genom sina åtgärder lyckats i utlandet på enskild väg, uppbringa försäljningen af dessa delar samt därmed ock väsentligen höja inkomsten för Akademiens Swedenborgsfond, så synes det vara lämpligt och rättvist, att han för redaktionen af de följande delarna må kunna ur denna Akademiens fond få uppbära något redaktörsarfvode; och har jag vid underhandling med honom angående denna fråga funnit, att han härtill vore villig samt åtnöjer sig med ett så lågt belopp som 20 kronor per ark. Jag anhåller därför att få tillstyrka detta, så mycket hellre som den ifrågavarande Swedenborgsfonden, nu uppgående till öfver 4,000 kr., uteslutande tillkommit genom försäljning af de trenne första delarna af Akademiens Swedenborgsverk, hvartill Akademien själf icke utbetalat några medel, men däremot själf sedan flera år tillbaka uppburit all den ränteinkomst, som å denna fonds kapitalbelopp influtit.

3. På enskild bekostnad trycktes af de i dessa trenne delar införda inledande artiklar ett större antal separatexemplar, nämligen i en upplaga af 2,000 ex., hvilka sammanfördes till en serie under titel »Emanuel Swedenborg as a scientist», äfvensom ock af Daedalus hyperboreus en upplaga af 1,000 ex. Enär sålunda af dessa publikationer återstår ett stort antal exemplar, som icke utdelats eller erfordras för »Opera quaedam», föreslås härmed, att det må medgifvas herr Stroh att införa 500 ex. af dessa tryck i den af honom utgifna nya serien »The Swedenborg Archives». Emedan Akademien icke haft någon utgift för dessa tryckalster, då de i likhet med de trenne delarna, hvari de dels ingått, dels (Daedalus) komma att införas, bekostats af enskild person, hemställer jag, att kommittén och Akademien ville lämna sitt bifall till denna anhållan, så mycket hellre, som därigenom kännedomen

om Emanuel Swedenborgs vetenskapliga verksamhet och dess betydelse kan afsevärdt främjas inom större folkkretsar.

4. Slutligen föreslås, att Swedenborgskommitténs protokoll jämte bilagor skola af kommitténs sekreterare öfverlämnas till K. Svenska Vetenskapsakademien, samt att herr Stroh erhåller uppdrag att fortsätta den redaktionella verksamheten med utgifvande af de följande delarna af det af Akademien utgifna verket »Opera quaedam de rebus naturalibus», som så långt möjligt må bekostas af de till Akademien genom delarnas försäljning influtna och inflytande medlen.

Stockholm den 9 maj 1915.

GUSTAF RETZIUS,
hittillsvarande ordförande i Vetenskapsakademiens Swedenborgskommitté.

S. G. Nathorst.
Svante Arrhenius.
S. E. Henschen.
Erik Müller.

Till Kungl. Vetenskapsakademien.

Undertecknad anhåller härmed att få till Akademien öfverlämna åtföljande, af ledamöterna i dess Swedenborgskommitté undertecknade skrifvelse och att Akademien med afseende på däri framställda förslag ville fatta beslut.

Stockholm den 11 maj 1915.

GUSTAF RETZIUS.

Rätt afskrifvet:

H. Johansson.
E. Broman.

Appendix, No. 5.

Annual Report of Work in Sweden on Swedenborg's Manuscripts and related Archives.[1]

THE SWEDENBORG ARCHIVES
Editor: Alfred H. Stroh. M. A.

R. T. 1875.
A. T. 32.

All communications relating to *The Swedenborg's Archives* should be sent to the editor, to above address. Other communications, relating to the publication of Swedenborg's theological and scientific manuscripts, should be sent in care of Library of the Royal Swedish Academy of Sciences, Experimentalfältet, Stockholm, Sweden.

Upsala, Sweden, April 24th, 1915.
Vasagatan 1 C.

Phototyping.

The preceding Annual Report, dated October 22nd, and recent monthly reports, describe the progress of the work on Swedenborg's Manuscripts and indicate that the completion of the plans decided upon in 1910 is not far distant if the present rate of production can be maintained. According to the London resolutions of July 11th, 1910, a number of manuscripts by Swedenborg were to be phototyped by July, 1915, and in the course of the printing since 1910 the general results desired have been attained to such an extent that at present writing all of the volumes contemplated are either finished, or in press. Besides the *Summary Exposition of the Prophets and Psalms*, the *Memorabilia* or *Spiritual Diary*, and the *Index Biblicus*, undertaken by various societies since 1896, the series of phototypes extending the photolitographs of 1869—1870 includes the *Explicationes in Verbum seu Adversaria*, the *Arcana Coelestia*, the *Apocalypsis Explicata*, the *Index* of the *Apocalypse Revealed* and of *Conjugial Love*, and a volume of *Miscellanea Theologica*. The last few volumes are in press and the photographing and phototyping proceeds daily under the editor's superintendence and with the intelligent and energetic assistance of the company Lagrelius and Westphal. Arrangements for the titles, contents, prefaces, and binding, are also being made by the editor with the assistance of the London Swedenborg Society under whose direction the phototyping has been carried on since 1910.

[1] To the previously distributed report in proofsheets from *Archives*, Part II., are here added an *Addendum* and *Postscript*. Malmö, Sweden. Aug. 17th, 1915. A. H. S.

In order to prepare for the continuation of the phototyping the editor has secured the right to the edition of *Swedenborgiana*, Part I., and suggests that under that title the remaining scientific, philosophical, and theological works and documents of Swedenborg be undertaken as soon as the series undertaken in 1910 shall have been completed. I recommend that the societies at present engaged in the phototyping work appoint representatives with power to act in authorizing the new series of photyped *Swedenborgiana*.[1]

Scientific Works.

The series of Swedenborg's scientific works under publication by the Royal Swedish Academy of Sciences will now be printed at Upsala, by the firm Almqvist and Wiksell which has a contract for the Academy's publications until 1932. Volume IV. of the series *Opera Quaedam de Rebus Naturalibus* will be finished by the firm Aftonbladet at Stockholm, but the future volumes will be printed at Upsala by Almqvist and Wiksell. The editor's office has therefore been removed to Upsala, but as Stockholm is only one hour distant by rail, and as there are two excellent telephone lines, the communications are first-class.

The Swedenborg Archives.

The work on the "Chronological List" has been reorganized due to the resignation of the editor's secretary in January and instructions from London not to employ a new secretary at present. But in order to continue the textual, historical and bibliographical labors represented by the List and previous researches since 1902 the editor has

[1] The agreement on behalf of the New Church Publising Society of Stockholm is given in its official form below:

Nykyrkliga Bokförlaget
50 Kammakargatan 50
Stockholm.

Stockholm den 11 August 1915.

Mr Alfred H. Stroh,

Vasagatan 1 C, Upsala.

Dear Mr Stroh.

According to a vote of the Nykyrkliga Bokförlaget you are authorized to sell to the foreign Swedenborg Societies the phototyped part I of "Swedenborgiana" for Kr. 550. At the same time, with 30 % discount, you may sell the catalogued publications of Nykyrkliga Bokförlaget extra contant, freight excluded.

Yours truly
NILS SUNDSTRÖM,
President of Nykyrkliga Bokförlaget.

made an agreement with Almqvist and Wiksell to publish the past and present results in a series entitled *The Swedenborg Archives*, Part I. of which appeared in 1912.

The present Annual Report will be supplemented by a more detailed special *Addendum*, and in the meantime the work in Sweden is strongly recommended for continued support by the united societies now engaged in it.

Respectfully submitted
ALFRED H. STROH.

Addendum.

Having resumed work at Stockholm, in January, the editor gradually inspected and thoroughly reorganized the three departments of the work in Sweden, and the monthly reports of progress are now bring distributed to the following addresses for the six corporations engaged in the phototyping:

Rev. Arthur Wilde, Swedenborg Society, 1, Bloomsbury Street, London, W. C., England.

Rev. Joseph Deans, Conference of the New Church, 38, Crouch Hall Road, Crouch End, London, N., England.

Mr. Edward C. Bostock, Academy of the New Church, Bryn Athyn, Montgomery Country, Pennsylvania, U. S. A.

Mr. James R. Carter, General Convention of the New Jerusalem, 246, Devonshire Street, Boston, Mass., U. S. A.

Mr. H. P. Chandler, Rotch Trustees, 93, Forest Hills Street, Jamaica Plain, Mass., U. S. A.

Mr. H. W. Guernsey, American Swedenborg Printing and Publishing Society, 3, West 29th Street, New York City, N. Y., U. S. A.

The monthly and annual reports have also been sent from time to time to other addresses in Europe and America, but the above are here supplied as being the official addresses for the transaction of business at the present time. The annual reports from 1902 to 1912 were printed in 1912 in Part I. of *The Swedenborg Archives*, and Part II., now in press, will contain other historical documents and recent reports covering the period 1912 to 1915. Special attention must be drawn to these reports as they are the only accessible publications which explain in a complete and consecutive manner the history of the various departments of the work in Sweden now to be reported on in detail.

The Phototyping of Swedenborg's theological, philosophical and scientific manuscripts.

Under the editorship of Dr. R. L. Tafel there appeared at Stockholm in 1869—1870 ten folio volumes of photolitographs of Swedenborg's scientific, philosophical, and theological manuscripts. All of the new series of phototypes in hand during the past twenty years will make at least twenty additional folio volumes as follows:

Summary Exposition of the Internal Sense of the Prophets and Psalms	1 vol.
The Spiritual Diary	3 vols.
Bible Index	3 »
Explanations of the Word or Adversaria	3 »
Arcana Coelestia	5 »
Apocalypse Explained	3 »
Miscellaneous Theological Manuscripts, including Index to Apocalypse Revealed and Conjugial Love	1 vol.
Swedenborgiana, Part I	1 »
Total number of vols.	20 vols.

This very large and expensive series of publications is unique in the history of Swedenborgian printing and constitutes an enormous expansion in addition to the ten volumes of photolithographs. *But the task of reproducing Swedenborg's manuscripts is by no means finished.* One of the remarkable facts in connection with the two series of photolithographs and phototypes is that thay are *selected groups* of Swedenborg's Manuscripts, not intended to cover the whole of any single period of his long and multifarious literary activity.

For over a century the discussion of Swedenborg's life and works has been retarded by the pregnant fact that his authorship was so extensive that no society or editor has ever succeeded in publishing anything like a complete edition. As editor, since 1902, of numerous texts in Swedenborg's native land, I have to emphasize the fact that a fraction of the money expended by Swedenborgian and New Church societies since Swedenborg's death in 1772 would, if properly applied, have long ago sufficed to publish a complete edition of Swedenborg's works, letters and documents, including also all connected documents. In these days of cooperation and combination I therefore suggest that when the present series of phototypes shall have been completed the united societies engaged in their printing concentrate upon finishing the phototyping by reproducing the remainder of Sweborg's MSS. in the series *Swedenborgiana* begun in 1910. If any of

the societies find themselves unable to continue their support of the phototyping I suggest that the others unite afresh and complete the work at all costs even if it must be done more slowly than now. It is my mature opinion after many years of experience with the editorial work in Sweden that such work should not be carried on too hastily if the best results are to be secured, and that it is more important to secure an even, steady production, and actually finish everything, than to rush these works through the press at such a rate that the funds are too rapidly exhausted, thus endangering the steady publication of the whole series of reproductions contemplated.

This brings me to the present condition of the series now in hand. All of the works scheduled in 1910 are in press, but according to the printer's most recent calculations the photographing of the manuscripts cannot be finished until the autumn and winter, and the printing during the spring. On account of delays in the ordering and delivery of parchment from England the binding of the volumes ready cannot be finished until next quarter as no parchment was ordered before the war except for the *Index Biblicus*. The prefatory materials have been written, revised and rewritten from time to time, but need still further editing as the volumes are not yet dry enough for revision and binding.

In order to prevent all misunderstanding I may explain in some detail how slowly the printing and editing of the phototyped volumes must necessarily proceed. After several weeks of photographing a stock of plates is gradually prepared for press and a dummy is made by the editor showing what pages of the MS. are to appear on the printed pages, sometimes a very complicated matter. After several hundred pages have been printed on one side of the sheets they are laid away to dry for some three months. For instance in the case of the *Arcana*, the last of the five volumes could be reported as being in press in March, but after that the sheets had to dry and the work is first quite recently completely off the press and must therefore lie undisturbed until August before being finally delivered to the binder, and bound. This will illustrate how the *Apocalypse Explained* will be in press months after the photographing has been finished, and then the leaves must dry twice after each impression. Even with several presses and at large number of persons doing work constantly on the Swedenborg reproductions, such work, it will be seen, must perforce go slowly, for it is not at all like other printing which either requires no photographing, etc., or dries immediately.

The large phototyping debt which had accumulated during the editor's absence and which had increased to such an extent that at the

beginning of the present quarter it amounted to kr. 20,929: 22, has since then been reduced very considerably by the Swedenborg Society. The tension was, however, so great that the printing firm requested a guarantee by a Swedish bank, and the paper firm payment in advance. It will thus be seen that war conditions do not fail to make their influence felt, and I have been requested by the printer to obtain if possible regular and complete quarterly payments from the contributing societies, and also the decision of the societies to continue the phototyping of the remaining MSS. of Swedenborg after the present series shall have been finished next year. This I have hitherto attempted to do by letters from the firm and myself, and also in the present annual report. A special Appeal will follow; in the present annual report the general conditions have been defined and the question of the continuation of the phototyping has been definitely raised after having been suggested in the previous annual report.

Scientific Works.

When the London Swedenborg Society undertook to direct the work in Sweden in the year 1910 I was repeatedly advised by the Secretary, the late Mr. James Speirs, that the phototyping should be made the main business and pushed to a conclusion, but that I need never fear that the Society would later, upon the completion of the phototyping, abandon the other work in Sweden, namely, the edition of Swedenborg's scientific works *Opera Qaedam de Rebus Naturalibus* and the editing of the proposed new edition of *Documents concerning Swedenborg*. Indeed, the strongest efforts were made to have me report in detail not only the phototyping, but also the scientific editing which was being conducted by me as editor for the Swedenborg Committee of the Royal Swedish Academy of Sciences. Accordingly I reported in detail the phototyping, and in general concerning the scientific works, Swedenborgiana, and new items. Subscriptions for the scientific works were received not only from America from corporations and individuals, but also from the Swedenborg Society. All of these facts may be of great and growing significance in the future as the Swedenborg Committee of the Royal Swedish Academy of Sciences has just made a final report to the Academy on the 26th of May recommending the further expansion and continuation of the series under my editorship. Instead of increasing the edition from 500 to 1,000 copies it was voted to continue with 500 and the understanding is that all subscriptions shall be concentrated in the Swedenborg Fund of the Royal Swedish Academy of Sciences for the publica-

tion of Swedenborgiana and the honouring of Swedenborg's memory. This Swedenborg Fund, in charge of the Treasurer of the Academy of Sciences, is therefore protected by the Academy and ultimately by the King and Government of Sweden. If properly increased this Fund may be made the means of much useful work, and I shall make a special appeal on behalf of it in the near future. At present the editing and publication of Vols. IV. and V. of the scientific series is in progress, having been resumed recently.

The Swedenborg Archives.

With the above title it is proposed to edit in a series of Parts and Volumes all the documentary and critical results obtained since 1902. Very little work has been done recently in this department, but with the 200 Pounds remaining for 1915—1916 I hope to prepare for press the large body of Manuscripts now in my office. The intention of Mr. David Wynter, of Mr. John Pitcairn, and of the contributing societies, was that the work on »Chronological List» and connected work should be completed in three years, from July, 1913, to July, 1916, and I am therefore preparing to resume the work in the near future so as to be able to report the results at the proper time and to go to press with *The Swedenborg Archives*, and with the *Chronological List* in the *New-Church Magazine*. Upon the completion to the work planned for 1913—1916 I recommend that new funds be supplied by interested societies and individuals for the publication of *The Swedenborg Archives*. As editor of the scientific series and proposed *Archives* I have been promised kr. 20 per sheet for the editorial labor, and also desire to recommend for further employment as my assistants my former secretary, Miss Cyriel Lj. Odhner, and the Rev. J. E. Rosenqvist of Gothenburg, both of whom are well qualified to prepare drafts of copies and translations.

Outlines of the Life, Philosophy and Influence of Emanuel Swedenborg.

The editing of Swedenborg's theological and scientific texts and of miscellaneous documents by and concerning Swedenborg has produced since 1902 a considerable body of biographical matter which I have been working up in numerous short pieces and also in a work entitled »Outlines of the Life, Philosophy and Influence of Emanuel Swedenborg». Some 2,000 kronor have been collected for the publication of this work, and the New Church Publishing Society of Stockholm

has decided to make a contract with the Royal Printing House Norstedt & Sons to issue the "Outlines" in a large and well printed edition including numerous illustrations. The English edition will appear either at Boston in separate form, or at Upsala in *The Swedenborg Archives*, which will also include a number of reprints from the edition of the Royal Swedish Academy of Sciences.

Upsala, Sweden, May 31st, 1915.

A. H. S.

Postscript.

Before leaving the shores of Sweden on a journey to England, and possibly to America, in order to obtain new contracts and funds for the work in Sweden, the complete Annual Report for 1914—1915 is herewith distributed together with a few items of supplementary information. An intended "Appeal" on behalf of the work in Sweden will be distributed later.

Phototyping.

The current monthly reports indicate that the phototyping of the *Apocalypse Explained* has proceeded so far that the whole work is photographed and the printing of Vol. II. in progress. Codex 7 of Swedenborg's MSS. will fill over 300 pages of the volume *Miscellanea Theologica*, and the photographing is in progress. No accounts for these works, comprising four volumes folio, have been rendered, the last bill for previous quarter having been for the concluding portion of *Arcana Coelestia.*

The original intention of the united societies was to finish the work undertaken in 1910 after five years. The phototyping was, however, not authorized by the London Swedenborg Society until the editor's visit to London in 1911, although the *Adversaria* had been in hand since the summer of 1910, the reproduction of that work having been authorized by the representative of the Academy of the New Church, Mr. John Pitcairn. In 1913 the editor's intention was to finish all of the works scheduled by 1916, but subsequent efforts to still further accelerate the speed of photographing and phototyping made possible the realization of the plans then developed to finish the work by 1915. After recovering from the effects of overstrain and neurasthenia the editor returned to Stockholm in January, 1915, with the intention of finishing the phototyping by July, according to instructions from London, even if a second printer were to be employed. This plan was

fustrated by the discovery of a large phototyping debt which amounted at the beginning of the previous quarter to over 20,000 kronor. In view of this circumstance no new printer could be engaged and consequently the remaining four volumes were begun with Lagrelius and Westphal as usual. On July 31st the Swedenborg Society sent from London the last fourth of 1,200 Pounds in liquidation of the accumulated debts, and the work again proceeded normally, the great strain having been relieved. But in view of the circumstances the completion of the work has been retarded and the firm Lagrelius and Westphal have recently confirmed by letters to the Secretary and Treasurer of the London Society my previously reported statement that the phototyping cannot be finished until next year as the rate of reproduction cannot be still further increased. In view of these conditions I have requested the Swedenborg Society to continue the usual quarterly payments until July 1st, 1916, but the Council and Committee, according to the letters of the Secretary and Treasurer, refuse to consider any further extension of the work or of the editor's grants after the present quarter. I am therefore proceeding to London and if necessary to America according to a contract with the printer before September 1st in order to assure the continuation of the phototyping. My suggestion is that the works scheduled in 1910 be finished and distributed by July 1st, 1916, and that six new volumes be undertaken, to include Swedenborg's Bibles in 2 volumes, scientific and philosophical manuscripts in 2 volumes, and letters, memorials and miscellaneous documents in 2 volumes. The advisability of reproducing the remaining MSS. is selfevident in view of the previous efforts since 1868 to reproduce Swedenborg's MSS., and even if the conditions in London are so unfavorable that the money does not exist there to do this work, nor the interest is sufficiently strong in the present disturbed political state, I nevertheless urge the American societies to continue the work, the funds being as before transmitted to Sweden either directly as in the case of *Spiritual Diary*, etc., or over London if the Swedenborg Society will agree to act as hitherto. I know that there is a strong sentiment in America in favour of reproducing the remainder of Swedenborg's MSS., and as editor since 1902 I strongly recommend it.

The preparation of prefaces and tables of contents still proceeds in view of the necessity of waiting for the delivery of the *Arcana* from the printer's establishment to the binder and of the delay in the arrival of parchment from London. The fourth volume of the *Arcana* is still drying, but will be ready for delivery during the month. The parchment, ordered by the binder months ago from England, according

to the instructions received from London, had not yet arrived last week, except for *Index Biblicus*. The binding and distribution of the works phototyped has therefore been delayed, and the binder has advised against their being distributed during the present disturbed state of shipping, although the binding may proceed after the arrival of the parchment.

Scientific Works.

The phototyping constitutes the first and most important line of work in Sweden, but the publication of Swedenborg's scientific works by the Royal Swedish Academy of Sciences appeals to many persons very strongly. The Swedenborg Fund of the Academy contains over 4,000 kronor, and there exist numerous copies of MSS. and also a collection of articles and notes by prominent scientists. The Swedenborg Committee of the Academy presented to that body on May 26th a memorial, adopted by the Academy, in which it was recommended that the editor be engaged to continue the series of Swedenborg's works at the rate of kr. 20 per sheet, and that he be presented with 500 copies of the series *Emanuel Swedenborg as a Scientist* and of *Daedalus Hyperboreus* for a volume of *The Swedenborg Archives*. Vol. IV. of the series *Opera Quaedam de Rebus Naturalibus* is in press and future volumes will follow. They will contain among other MSS. all of the works included by Dr. Rudolf Tafel in *The Brain*, and Professor Dr. O. M. Ramström, of Upsala University, has recently reaffirmed his intention to assist the editor with Vols. III. and IV. of *The Brain*, all of the materials for those volumes having been sent to Sweden in 1913 by the Swedenborg Society on the recommendation of the editor and deposited in the Library of Upsala University for use by Professor Ramström in collaboration with the undersigned.

Swedenborg Arehives.

In addition to the phototyping work and the scientific series a third line of work has been in hand ever since the editor's first visit to Sweden in 1902, namely, the investigation and publication of documents concerning Swedenborg's life and works. Many new works and documents by and concerning Swedenborg have been brought to light since 1902 by the editor and his assistants. A *Chronological List* of the old and new materials has also been worked out for publication from 1902 to 1915 and thousands of pages have been copied by hand or typewritten. The previously collected results of Tafel, Hyde and Odhner have also been collected at Stockholm in

1913 and have recently been transferred to Upsala, the intention being to revise the whole mass for press according to the numbers of the *List* for publication in *The Swedenborg Archives.* The work hitherto done has been paid for by Professor Gustaf Retzius and the editor from 1902 up to 1915, by Mr. John Pitcairn since 1908, and by the Swedenborg Society, the Academy of the New Church, and the General Convention since 1913. Mr. David Wynter offered 50 Pounds for three years from 1913 to 1916 at the Annual Meeting of the Swedenborg Society in 1913, and subsequently 100 Pounds for three years from London, Bryn Athyn and Boston were arranged for. Up to date the subscriptions have been received and expended in the following proportions, 300 Pounds from London, 200 Pounds from Bryn Athyn and 200 Pounds from Boston, the remaining 200 Pounds from America having been promised by the Treasurers of the Academy of the New Church and General Convention in due course.

The work under the above mentioned *Chronological List* accounts has been carried on by Mr. Paul Blaise of London, by Miss Cyriel Lj. Odhner of Bryn Athyn, by the Rev. Joseph E. Rosenqvist of Gothenburg, and by the editor, all the expenses having been paid except Mr. Rosenqvist's last statement, which it is hoped will be met in the near future upon the arrival of the promised 200 Pounds from America, or by new funds for *The Swedenborg Archives.*

The assets for *The Swedenborg Archives* are Part I., 500 copies, paid for by the editor, Part II., in press, the edition of 500 copies of *Emanuel Swedenborg as a Scientist* and *Daedalus Hyperboreus*, the editor's large collection of documents and copies, and after the consent of the London, Bryn Athyn and Boston societies has been obtained, the numerous copies made and to be made under *List* accounts. The editor is at present without an assistant, Miss Odhner having resigned in January and returned to Bryn Athyn this month, and the Rev. Joseph E. Rosenqvist being otherwise employed until the payment of his account.

Outlines of Swedenborg's Life, Works, and Philosophy, and the Swedenborg Statue.

The phototyped reproductions, printed scientific works, and materials for *Archives*, constitute a new and very reliable basis for an extended biography of Swedenborg. Such a work has been drafted by the editor from time to time and its publication has been considered favorably at Boston by the Rotch Trustees and Massachusetts New Church Union, and in a Swedish edition by the New Church Publishing Society of Stockholm, the »Outlines» having been published in brief by that body

in January, 1909, and some 2,000 kr. collected since then for an enlarged edition. Works by Professor Hjalmar Holmquist of Lund, and Docent Martin Lamm of Upsala have also been published, and Dr. Emil A. G. Kleen of Stockholm has also written a large biographical work. The biographical results are becoming the subject of en increasingly animated study and discussion which it is hoped will eventually arouse new interest in the erection of Swedenborg's Statue at Stockholm in 1916 or later, this project having received attention for several years not only in Sweden, but also in England and America.

Malmö, August 17, 1915.

A. H. S.

Appendix.

Reasons for continuing the Work in Sweden, with Chronological List Accounts for 1913—1915.

In the Anuual Reports for 1913—1914 and 1914—1915 it was suggested that the phototyping of Swedenborg's Manuscripts be continued after the works scheduled in 1910 shall have been finished. Whatever delays there may have been in publication and in the payment of bills the general policy of reproducing Swedenborg's MSS. ought not to be given up because of such temporary difficulties. With the expenditure of another 2,000 Pounds for 1915—1916 the work undertaken in 1910 after the International Swedenborg Congress will be paid for, and under the supposition that by next spring all of the present series will be cleared away, I desire to submit for the consideration of the societies interested a number of reasons for continuing the work in Sweden, together with the Chronological List Accounts for 1913—1915.

The advisability of reproducing Swedenborg's MSS. has been dwelt upon again and again at the meetings of New Church bodies and in the connected literature. Large sums of money have been invested in such reproductions since 1868, and with the works now in hand there will be 30 volumes accessible. By adding another group of five or six volumes the remaining MSS. of Swedenborg will also be made accessible in photographic reproductions.

But how can the additional volumes which would finish the series be paid for? The resources in England are drained and new proposals are unlikely to receive favorable consideration there for some years to come. This is the standpoint taken now by the leaders of the

Swedenborg Society and Conference, as I found during my visit in London recently.

Are the American societies able and willing to authorize the proposed additional volumes and to continue the work in Sweden? Both series of reproductions, the Photolithographs and Phototypes, were originally undertaken in America, and the editing has been conducted for the most part by Americans. But England in both cases consented to act with America in this important work of preserving for future times the exact form of Swedenborg's original MSS. In both cases important scientific and documentary results were also obtained. I therefore submit the following proposals.

1. Let the phototyping of Swedenborg's Bibles and of other MSS. and documents of theological, philosophical, scientific and miscellaneous content be undertaken by the American societies.

2. Let the Swedenborg Society of London, or a special committee of the Society, manage the work as hitherto, transmitting the funds to Sweden, the Society and Conference later on after the works are finished taking a number of copies so as to complete the sets in England.

3. Let the photographing be begun at an early date as the firm Lagrelius & Westphal cannot retain the employees skilled in this work longer than this quarter if nothing new be undertaken. The photographing of *Apocalypsis Explicata and Miscellanea Theologica* being nearly finished, and the phototyping requiring only a few months more, things will come to a standstill presently if no new work be undertaken, involving a loss of time, labor and money.

The above proposals were viewed favorably by the secretary and treasurer of the Swedenborg Society during my visit last month in London. In view of the strained financial conditions I at the same time offered to continue the editorial work for the present without salary. Will the American societies kindly consider these conditions and back up the work and the editor financially?

* * *

The work of phototyping is being continued as usual, and the editing of the Stockholm edition and of *The Brain*, in both of which the British and American societies have an interest, as also of the *Chronological List*, has been continued this year after the editor's return to the work at Stockholm and Upsala. Much money from Swedish, American and British sources has been invested in the scientific works and documents, and in the degree that the results are

printed will the investments come back in the form of books. The best way to transact this business is to place contributions in the Swedenborg Fund of the Royal Swedish Academy of Sciences.

The Chronological List work and Accounts.

The results of editorial experience with the phototypes and scientific works will be made use of in the "Chronological List of Works and Documents by and concerning Emanuel Swedenborg". Without again describing the history of this extensive bibliographical undertaking before 1913, when the first volume was sent in typewritten form to England and America, and 300 Pounds *per annum* for three years were subscribed for the continuation of the typewriting work, it may here be mentioned that several volumes of typewritten matter have now been forwarded to England and America. Besides Swedenborg's *Dreams*, translated by Wilkinson and Dirkinck-Holmfeldt, sent out from Mösseberg last year, the copies forwarded comprise a package of slips for *Chronological List*, Part III., after 1745, the Bibliographical Notes of the Rev. James Hyde, the Jönköping Documents, the Gothenburg Documents, and an official copy from the House of Nobles of the Genealogy of the Swedenborg Family. The copies remaining in Sweden will now be revised, and after further revision and copying I shall forward the remainder of the *List*, including Additions and Appendices, with additional volumes of Gothenburg, Stockholm, and miscellaneous documents. All of the documents having been listed, copied, and translated, their publication in *The Swedenborg Archives* will be possible. In the meantime the *List*, with connected documents and discussions, will appear in the *New-Church Magazine*, according to instructions from the Swedenborg Society and arrangements with that periodical. The accounts for 1913—1915, involving expenses of over 600 Pounds, have been mostly covered by that sum received in the form of contributions for two years from London, Boston, and Bryn Athyn. The remaining expenses for 1915—1916, will be covered by the final contributions, amounting to another 300 Pounds, to be accounted for next year. In order to indicate how the money has been applied the names of the copyists are furnished below according to the four groups of work.

Copy.

Chronological List Accounts, 1913—1915.

Bibliographical Notes of Rev. James Hyde.

1913.		Kr.
Aug. 2	Mr. Paul Blaise for copying Hyde's Notes . . .	708.23
Sept. 6	» » » » » » » . . .	354.57
1914.		
Jan. 2.	» » » » » » » . . .	601.06
		1,663.86

Copying of Jönköping and Gothenburg Documents.

1914.		
Jan. 3	Rev. J. E. Rosenqvist for copying of above Documents	495.75
Apr. 1	» » » » » » » »	1,297.—
Nov. 20	» » » » » » » »	89.—
		1,881.75

Copying of Stockholm MSS. and miscellaneous secretarial work.

1913.		
Oct. 22	Miss Cyriel Odhner for copying etc.	682.50
1914.		
Jan. 6	» » » » » »	682.50
March 31	» » » » » »	682.50
June 10	» » » » » »	682.50
Sept. 14	» » » » » »	682.50
1915.		
Jan. 1	» » » » » »	725.63
Febr. 4	» » » » » »	230.—
Apr. 3	» » » » » »	476.25
» 30	» » » » » »	190.—
		5,034.38

Miscellaneous Editorial and Office Expenses.

		Kr.
1913.		
July 25	Rev. E. J. E. Schreck, editorial work on Tafel's and Hyde's MSS., etc.	145.84
1914.		
Jan. 19	House of Nobles for 4 copies of Genealogy of Swedenborg Family	112.—
1915.		
Oct. 8	Miscellaneous editorial and office expenses . .	2,995.75
		3,253.59

Recapitulation.

Bibliographical Notes of Rev. James Hyde	1,663.86
Copying of Jönköping and Gothenburg Documents . . .	1,881.75
Copying of Stockholm MSS. and miscellaneous secretarial work	5,034.38
Miscellaneous editorial and Office Expenses	3,253.59
	11,833.58

Upsala, Sweden, Oct. 9th, 1915.

ALFRED H. STROH.

The above Accounts audited and found to agree with the verifications attested:

Elias Jansson,
Revisor.
Superintendent for the Commercial School, Upsala.

Attested:

E. Cederström, Upsala. E. Stiernstedt. Upsala.

Chronological List Itemized Expenses 1913—1915.

The Itemized Expenses for *Chronological List* and connected expenses from July, 1913, to October, 1915, are furnished below to the three treasurers, namely, F. A. Gardiner, Esq., London, J. R. Carter, Esq., Boston, and E. C. Bostock, Esq., Bryn Athyn. For a synopsis of the expenses under leading items see "Chronological List Accounts, 1913—1915", at the close of Appendix to Annual Report recently

dstributed. The 600 Pounds received for 1913—1915 nearly cover the expenses below, and for the remainder of the period 1915—1916 the 300 Pounds still remaining must cover the rest of the work, to be completed by the Rev. J. E. Rosenqvist of Gothenburg and the editor, the accounts for the third and last year being distributed after the completion of the work. Up to the present time one third of the contributions for 1915—1916 has been received, namely 100 Pounds from London, leaving 100 Pounds from Boston and 100 Pounds from Bryn Athyn.

1913.		Kr.
July 25	Rev. E. J. E. Schreck, editorial work on Tafel's and Hyde's MSS. etc.	145.84
Aug. 2	Mr. Paul Blaise for copying Hyde's Notes	708.23
Sept. 6	» » » » » » »	354.57
Oct. 7	Freight from London to Stockholm	15.64
» 21	Miss Cyriel Odhner for copying	682.50
Nov. 5	Continental Typewriter Co.	18.—
» 22	Freight from London to Stockholm	13.45
1914.		
Jan. 2	Mr. Paul Blaise for copying Hyde's Notes	601.06
» 3	Rev. J. E. Rosenqvist for coping documents	495.75
» 6	Miss Cyriel Odhner for copying etc.	682.50
» 7	Freight from London to Stockholm	13.75
» 15	Miss Forssén for copying	30.—
» 19	House of Nobles for 4 copies of Genealogy of Swedenborg Family	112.—
» 22	Continental Typewriter Co.	400.—
March 31	Miss Cyriel Odhner for copying etc.	682.50
April 1	Miss Cyriel Odhner, expenses	153.80
» »	Rev. J. E. Rosenqvist for copying documents	1,297.—
June 6	Continental Typewriter Co.	25.20
» 10	Miss Cyriel Odhner for copying etc.	682.50
» 30	Remington Typewriter Co.	17.36
Aug. 13	» » »	5.80
» 20	» » »	4.06
Sept. 12	» » »	2.55
» 15	Miss Cyriel Odhner for copying etc.	682.50
» »	Miss Cyriel Odhner, expenses	136.76
» 22	Remington Typewriter Co.	11.60
Oct. 26	Electrical Co.	23.—

		Kr.
Oct. 26	Continental Typewriter Co.	5.40
» 31	Mr. Sylwan, revision	49.50
» »	Miss Forssén for copying	32.—
Nov. 3	Royal Typewriter Co.	30.—
» 10	Remigton Typewriter Co.	9.86
» 14	Mr. Sylwan, revision	102.—
» 20	Rev. J. E. Rosenqvist for copying documents	89.—
» 27	Remington Typewriter Co.	28.22
» 30	Mr. Sylwan, revision	122.50
Dec. 1	Freight etc.	65.11
» 2	Filing boxes	30.—
» 15	Miss Cyriel Odhner, expenses	59.88
» »	Mr. Sylwan, revision	81.—
1915.		
Jan. 1	Miss Cyriel Odhner for copying etc.	725.63
» 15	Freight etc.	57.17
» »	Revision of accounts and papers	30.—
» »	Miss Cyriel Odhner, expenses	5.77
» 22	Freight etc.	2.70
» 28	Office Östermalmsgatan 19, Stockholm	95.—
Febr. 2	Freight etc.	27.—
» 4	Miss Cyriel Odhner for copying etc.	230.—
» 5	Heating Upsala office	16.60
» 18	Office Tegnérgatan, Stockholm	40.—
» 19	Exchange of Typewriters and Materials for table and document cases for office	40.—
» 22	Freight etc.	—.20
March 3	Telephone	12.50
» 8	Telegrams	298.40
» 20	Freight etc.	40.—
» 24	Lamps and lighting	19.90
» »	Almqvist & Wiksell, Upsala, for writing paper and envelopes	36.—
April 1	Heating Upsala office	9.—
» 3	Miss Cyriel Odhner for copying etc.	476.25
» 30	» » » » » »	190.—
May 10	Telephone	2.08
» »	»	15.—
» 15	Electricity	1.—
» 17	Telephone	15.—

		Kr.
May 17	Telephone	10.—
» »	»	4.17
» »	»	12.50
» »	Office Bredgränd 1, Upsala	225.—
» »	Freight etc.	45.57
July 29	Telephone	12.50
Aug. 18	Remington Typewriter Co.	8.75
Sept. 11	Telephone	15.—
» »	»	12.50
Oct. 9	Office Wasagatan 1 C., Upsala, to July 1916 .	400.—
	Kronor	11,833.58

Upsala, Sweden, Oct. 30th., 1915.

ALFRED H. STROH.

Audited and found correct

Elias Jansson,
Revisor.

Attested: E. Cederström, E. Karlsson.

Appendix. No 6. Mounthly Reports, 1911—1915.

Report of work in Sweden for the month ending July 1st, 1911.

Phototyping: Statements for the following amounts have been sent to the Swedenborg Society, London.

Phototyping of *Adversaria* I. & II. pp. 1—100 . .	kr.	2,600.—
» » » » » pp. 100—300 . .		5,004.70
Paper for *Adversaria*		1,399.92
» » »		5,302.47
	kr.	14,307.09

For remarks on Phototyping see back of this report.

Scientific Works:

Vols. I. to III. of the Stockholm edition have been printed. Vols. IV. and V. are in press. I have been authorized, as secretary of the Stockholm Committee, to mention in my monthly reports vhich volumes of the new series are in press.

Swedenborgiana:

A List of Miscellaneous Swedenborgiana, supplementing the recent-

ly published Chronological List of Swedenborg's Works, is being compiled.

New Items;

The Library of the Rev. James Hyde was examined during my recent visit in London and found to contain much material of value for the study of Swedenborg's works, documents and life.

Mr. John Pitcairn has generously authorized the copying of the recently discovered minutes and other papers of the *Societas pro Fide et Charitate* (Stockholm 1796—1833), and they are being typewritten by Miss Cyriel Lj. Odhner.

Stockholm, July 1st, 1911.

ALFRED H. STROH.

During a visit in London last May the phototyping of a number of Swedenborg's manuscripts was authorized by the Swedenborg Society, and it was decided that regular monthly reports of progress made in Sweden be sent to the societies concerned in the work, namely, to

The London Swedenborg Society,
The New York Swedenborg Society,
The General Convention of the New Jerusalem,
The Academy of the New Church,
The Swedenborg Scientific Association,
The Rotch Trustees.

My preliminary report of March 1st and annual report of May 11th have been sent to the above mentioned bodies, and the first monthly report now follows. Arrangements have been made to phototype the recently authorized (see annual report) *Miscellanea Theologica* and *Swedenborgiana II.* From the statement of expenses furnished in the present monthly report it will be seen that the maximum of 800 Pounds *per annum* recommended by the meeting of representatives in London, July 11th, 1910, has very nearly been reached during the past year.

A. H. S.

Report of work in Sweden for the month ending Aug. 1st, 1911.

Phototyping: Adversaria I. & II., pp. 300—400, in press.

Scientific Works: Opera Quaedam, Vols. IV. & V., in press.

The third edition of Swedenborg's Journals of Travel, *Emanuelis Swedenborgii Itineraria, Editio Tertia Emendata*, in press.

Swedenborgiana: Progress made in the investigation of Swedenborgiana during recent journeys to Falun, Gothenburg and Skara.

New Items.

Stockholm, Aug. 4th, 1911.

ALFRED H. STROH.

Report of work in Sweden for the month ending Sept. 1st, 1911.

Phototyping: Adversaria I. & II., pp. 400—500, in press.

Scientific Works: Opera Quaedam, Vols. IV. & V., in press.

Copies of Vol. III. have been sent to the libraries of the Swedenborg Society, London, the Academy of the New Church, Bryn Athyn, Pa., and the New Church Theological School, Cambridge, Mass. The edition will be distributed in September.

Swedenborgiana:

New Items: Progress made with the new Chronological List of Swedenborgiana, and numerous new documents concerning the Gothenburg Controversy, examined at the Gothenburg Consistory Archives during the past month.

Stockholm, Aug. 24th, 1911.

ALFRED H. STROH.

Report of work in Sweden for the month ending Oct. 1st, 1911.

Phototyping: A bill for *Adversaria* I. and II., pp. 305—504, sent to the Swedenborg Society, London . . . . . Kr. 5,008.50.

Have begun phototyping the volume of *Miscellanea Theologica.*

Scientific Works: Opera Quaedam, Vols. IV. & V., in press.

Emanuelis Swedenborgii Itineraria 1710—1739, Editio Tertia Emandata, revised and printing almost finished.

Swedenborgiana: In Progress:

1) A List of *Miscellaneous Swedenborgiana.*

2) Revision of *Worship and Love of God.*

3) Translation of Scientific and Philosophical Treatises, Part. II. 2.

4) Revision of English translation of Swedish material in *Opera Quaedam.* Vol. I.

New Items:

Stockholm, Sept. 29th, 1911.

ALFRED H. STROH.

Report of work in Sweden for the month ending Nov. 1st, 1911.

Phototyping: Adversaria I., pp. 505—727, II., pp. 505—601, in press. The phototyping of the concluding Vol. III. has been begun.

Miscellanea Theologica, pp, 1—54 printed in 1903, and the continuation in press.

The next work to be phototyped, as recommended by the meeting of representatives in London, July 11th, 1910, will be the MS. of *Arcana Coelestia*.

For remarks on phototyping see back of this report.

Scientific Works: Opera Quaedam, Vols. IV. and V. in press.

Emanuelis Swedenborgii Itineraria 1710—1739, Editio Tertia Emendata, printed.

A *Prospectus* of the scientific works, with list of recent festival and other publications, is about to be distributed broadcast to all parts of the world.

Swedenborgiana: The Minutes of the *Society pro Fide et Charitate* (Stockholm, 1796—1833) are being typewritten by Miss Cyriel Lj. Odhner, and revised by Hr. Hjalmar Kylén and the undersigned. After these valuable sources of early New Church history have been copied it is hoped that the newly discovered documents concerning the Gothenburg Controversy and other unpublished documents in Swedish archives will be copied preparatory to a new edition of *Documents concerning Swedenborg.*

New Items:

Stockholm, Oct. 26th, 1911.

ALFRED H. STROH.

The concluding portions of *Adversaria* I. and II. being now in press, the phototyping of Vol. III., comprising the remainder of *Adversaria*, has been begun.

The volume *Miscellanea Theologica* was begun in 1903, when Swedenborg's MSS. *De Conjugio*, *Annotata de Calvino and Adversaria in Veram Christianam Religionem* were phototyped. The other short MSS. and fragments reconmmended for reproduction by the meeting of representatives in London, July 11th, 1910, are in press, and the volume might suitably contain a number of additional MSS., as, for instance, the *Canones* and *Coronis.* Swedenborg's theological correspondence and other miscellaneous documents will be phototyped in *Swedenborgiana*, Part. II.

The meeting of representatives which recommended the phototyping of *Adversaria* and *Miscellanea Theologica* also recommended the phototyping of other MSS. in the following order:

Arcana Coelestia, first draft including *Index.*

Apocalypsis Explicata, first draft.

Index of *Apocalypsis Revelata.*

At the present rapid rate of reproduction the *Adversaria* and *Miscellanea Theologica* will soon be completed and the phototyping of *Arcana Coelestia*, a very extended series of MS. volumes, will be begun.

A. H. S.

Report of work in Sweden for the month ending Dec. 1st, 1911.

Phototyping: Adversaria III. and *Miscellanea Theologica*, in progress.

The phototyping of *Arcana Coelestia* having been authorized by the Swedenborg Society, work has been begun on Vol. I.

Scientific Works; Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Vol. III. has been distributed to the subscribers and Swedenborg's *Itineraria*, third edition, and *Emanuel Swedenborg as a Scientist*, Vol. I., Section 4, »The Sources of Swedenborg's Early Philosophy of Nature», have been distributed to the three libraries in London, Bryn Athyn and Cambridge.

Swedenborgiana; The copy for revised edition of *Worship and Love of God* is being completed.

New Items: New memorials by Swedenborg have been found in the State Archives and House of Nobles.

The study of Swedenborg's early philosophy in its relation to Polhem's unpublished MSS. in the Royal Library is being continued in view of certain discussions in recent festival publications on Polhem.

Stockholm, Nov. 27th, 1911.

ALFRED H. STROH.

Report of work in Sweden for the month ending, Jan. 1st, 1912.

Phototyping: A bill for *Adversaria* II., 505—501, and I., pp. 505—691 & 716—727, has been sent to the Swedenborg Society, London . . . . . Kr. 3,761.87

Of *Adversaria* III., *Miscellanea Theologica*, *Arcana* I., and Codex 39, for Vol. III., of *Index Biblicus*, 152 pp. have been photographed. The *Index Biblicus* will be ready for delivery by May 1st.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: Several new numbers have been added to the *List of Swedenborgiana.*

New Items: Over 900 copies of the *Transactions* of the Internatio-

nal Swedenborg Congress having been subscribed for by the Nations of Upsala University and presented to the subscribers by the Swedenborg Society, I have now attended to the distribution of the volumes at Upsala.

Stockholm, Dec. 28th, 1911.

ALFRED H. STROH.

Report of work in Sweden for the month ending Feb. 1st, 1912.

Phototyping: Adversaria III., pp. 1—64, in press.

Index Biblicus III., (Codex 39), pp. 509—580, in press.

Miscellanea Theologica and *Arcana* I. in progress.

Scientific works: Opera de Rebus Naturalibus Vols. VI. and V. in press.

Swedenborgiana:

New Items: A portrait of Swedenborg's sister Anna has been found at Grönsöö near Stockholm.

Stockholm, Jan. 30th, 1912.

ALFRED H. STROH.

Report of work in Sweden for the month ending Feb. 15th, 1912.

Phototyping: Adversaria III., pp. 65—100, in press.

Index Biblicus III. (Codex 39), pp. 581—600, in press.

Miscellanea Theologica and *Arcana* I. in progress.

Scientific works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: A List of recent European publications concerning Swedenborg's scientific works and miscellaneous Swedenborgiana has been compiled for publication at Stockholm.

New Items: Mr. John Pitcairn having generously authorized the photographing of numerous portraits and objects illustrating Swedenborg's life and times, 100 lantern slides have been made. Before being shipped to America they have been used at a lecture on Swedenborg's birthday delivered under the auspices of The New Church Publishing Society. Societies desiring similar slides should communicate with the undersigned.

Stockholm, Feb. 13th. 1912.

ALFRED H. STROH.

Report of work in Sweden for the month ending March 15th 1912.

Phototyping:

Adversaria III., pp. 101—250, in press.

Index Biblicus III. (Codex 39), pp. 601—646, the last pages of the work, in press.

Miscellanea Theologica, *Swedenborgiana* II., and *Arcana* I. in progress.

For remarks on Phototyping see back of this report.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V., in press.

The stereotyping of these scientific texts, in preparation for a proposed complete edition of Swedenborg's Works. *Opera Omnia Emanuelis Swedenborgii*, has been discussed in three recent communications to *Morning Light*, *New Church Life* and the *New Church Messenger*. The third communication, a memorial, has been sent to all New Church Printing Societies and to many of editors of Swedenborg's works and other persons interested in their publicatien.

Swedenborgiana:

New Items: The copies of Swedenborg's scientific MSS. made some years age for the Swedenborg Scientific Association (see annual reports in *The New Philosophy*) have been forwarded to the Secretaiy of the Association, the Rev. Professor Reginald W. Brown. Bryn Athyn, Pennsylvania, U. S. A.

Stockholm, March 11th, 1912.

ALFRED H. STROH.

Remarks on the Phototyping.

Although some progress has been made with the phototyping of *Miscellanea Theologica*, *Swedenborgiana* III., and *Arcana* I., the work has been manily concentrated upon *Adversaria* III. and *Index Biblicus* III. The last mentioned being now nearly finished I propose to push forward with *Miscellanea Theologica* and *Arcana* I. But the founds for the present financial year are nearly exhausted.

After corresponding with various persons concerning the proposed contents of *Miscellanea Theologica*, and various opinions having been expressed, I now suggest that all the smaller theological MSS. of Swedenborg not photolitographed be included in the volume, excepting only Swedenborg's letters and memorials of a theological nature, which should be included in *Swedenborgiana* II. and III. with all his other letters and memorials, the arrangement being strictly chronological.

In the first two of the three communications recently sent to *Morning Light*, *New Church Life*, and the *New Church Messenger*, the accuracy of the phototyped MSS. and of the method employed in

their production was defended and described in some detail because of recent statements in the *Messenger* and *Life* which called into question the reliability of the phototyped reproductions and of the photographic processes employed.

A. H. S.

Report of work in Sweden for the month ending April 15th, 1912.

Photatyping: A bill for *Adversaria* III., pp. 1—304, sent to the Swedenborg Society. London . . . . . kr. 3,800.

Miscellanea Theologica, *Swedenborgiana* II., and *Arcana* I. in progress.

For remarks on phototyping of *Miscellanea Theologica* see back of this report. Advice with regard to proposed contents is desired.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

During the last few weeks I have been corresponding with various societies and individuals concerning the proposed stereotyping of *Opera Quaedam* and preparations for *Opera Omnia Emanuelis Swedenborgii*, in continuation of the three communications referred to in the previous monthly report. A great deal of interest has been shown in both proposals, and a number of questions and objections by correspondents have beev answered.

Swedenborgiana:

New Items:

P. S. April 27th, 1912. — The progress in phototyping is indicated by the increase of pages reported for *Adversaria* III., that is, 54 pp. The previous report reads pp. 101—250, the present one is increased to p. 304. Nothing further has been done on the other works except to arrange proposed contents, of which further in a letter to Mr. Speirs.

A. H. S.

(The above P. S. added in the copies of this report sent to Mr. Speirs in reply to his enquiry.)

Stockholm, April 15th, 1912.

ALFRED H. STROH.

Remarks on the Phototyping.

In the list below are included all the items recommended by the meeting of representatives, London, July 11, 1910, and such others as deserve to be called theological works by Swedenborgs hitherto

unreproduced. Swedenborg's letters and memorials of a theological nature should be included in the series *Swedenborgiana* in chronological order together with all his other letters and memorials as suggested in the previous monthly report.

Proposed contents of Miscellanea Theologica.

Theological letters, memorials, etc., being phototyped in the series *Swedenborgiana*, together with the other letters, memorials and miscellaneous documents by Swedenborg, I suggest that the contents of *Miscellanea Theologica* be the following:

1. *De Conjugio*, Codex 14, Bib. 2,370, *phototyped.*
2. *Annotata de Calvino*, Codex 48, Bib. 2,473, *phototyped.*
3. *Additiones ad Veram Christianam Religionem*, Bib. 2,715, *phototyped.*

Note: The above MSS. were phototyped during my first visit in Sweden ten years ago and fill 54 pp. folio of the usual size.

Proposed Continuation.

4. *De Gade et Aschere*, a fragments of Swedenborg's *Memorabila* at Bath, Bib. 498.
5. *De Telluribus*, MS. *Errata Typographica*, Bib. 956.
6. *De Coelo et Inferno*, MS. *Contenta* and *Errata Typographica*, Bib. 1,062.
7. *De Ultimo Judicio*, MS. *Errata Typographica*, Bib. 1,166.
8. *De Nova Hierosolyma*, MS. *Errata Typographica*, Bib. 1,210.
9. *De Athanasii Symbolo*, Bib. 1,516
10. *De Domino*, Bib. 1,527.
11. *Quinque Memorabilia*, Bib. 2,364.
12. *Canones*, Bib. 2,513.
13. *Appendix ad Codicillum De Equo Albo*, Bib. 2,688.
14. *Index to the Formulae Concordiae*, Codex 47, Bib. 2,714.
15. *Swedenborg's Reply to Cuno.* State Library, Brussels.
16. *Reply to Ernesti*, Thysian Library, Leyden, Bib. 2,899.
17. *Coronis*, Bib. 2,918.
18. *De Consumatione*, Bib. 2,953, 2,955.

Report of work in Sweden for the month ending May 15th, 1912.

Phototyping: Adversaria III., pp. 305—350, in press.

Mescellanea Theologica, Swedenborgiana II., and *Arcana* I. in progress.

Arrangements have been made for rebinding Swedenborg's MSS. left unbound 40 years ago after the photolithographing.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana:

New Items:

Stockholm, May 14th, 1912.

ALFRED H. STROH.

Report of work in Sweden for the month ending June 15th, 1912.

Phototyping: Adversaria III., pp. 351—400, in press.

Miscellanea Theologica, *Swedenborgiana* II., and *Arcana* I. in progress.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: Besides the regular printing progress has been made with the translations of the Swedish material in Vol. I. of *Opera Quaedam* and with the revision of the translation of the *Worship and Love of God.*

New Items: A speech by Swedenborg in which he praises the »Time of Freedom» has recently been found in the State Archives.

Stockholm, June 10th, 1912.

ALFRED H. STROH.

Report of work in Sweden for the month ending, July 15th, 1912.

Phototyping: A bill for *Adversaria* III., pp. 305—400, sent to the Swedenborg Society, London . . . . . kr. 1,208.50.

Adversaria III., pp. 401—450 in press.

Miscellanea Theologica, *Swedenborgiana* II. and *Arcana* I. in progress.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana:

New Items:

Stockholm, July 3rd, 1912.

ALFRED H. STROH.

Report of work in Sweden for the month ending Aug. 15th, 1912.

Phototyping: Adversaria III., pp. 684—799 (Codex 62), photographed.

Miscellanea Theologica, *Swedenborgiana* II., and *Arcana* I., in progress. The matter is being arranged for press and some pages have been photographed.

In reply to enquiries received from two of the societies concerning an increase in the amount of matter phototyped *per annum*, I have expressed the opinion that with the present arrangements with the phototyping firm, Lagrelius & Westphal, about one third more of the present output *per annum* might be produced.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V., in press.

The stereotyping of Swedenborg's texts, with a view to *Opera Omnia Emanuelis Swedenborgii*, has been endorsed by the Swedenborg Scientific Association at its Annual Meeting, and the Academy of the New Church has expressed its willingness to cooperate with other bodies in making preparations to the extent of meeting one half of the expenses for stereotyping. See *Transactions*, July »New Philosophy»). Numerous letters, nearly all endorsing the proposed plans, have also been received by the undersigned in reply to recent memorials and articles on the stereotyping and *Opera Omnia* proposals.

Swedenborgiana: In connection with the work on the *List of Swedenborgiana*, included Swedenborg's letters and miscellaneous documents, I have worked out a plan to produce an exact typewritten copy in three sets of the original »Documents concerning Swedenborg», to include not only all the documents previously copied under the superintendence of Dr. R. L. Tafel, Rev. C. Th. Odhner, Rev. James Hyde, and myself, but also all the new documents discovered since 1902 in the Library of the Royal Swedish Academy of Sciencet, the Royal Library, the State Archives, the Gothenburg Consistory Archives and elsewhere. By employing Miss C. Lj. Odhner upon this work, the experience gained in reproducing the records of the Societas pro Fide et Charitate will be made use of in producing in first class form three typewritten sets of all the original »Documents concerning Swedenborg». Such copies would not only be of use in the editing of Swedenborg's texts, but would also gradually lay the foundation for a complete printed edition of the priceless originals. I present this plan for consideration by the Societies.

Stockholm, Aug. 15th, 1912.

ALFRED H. STROH.

Report of work in Sweden for the month ending Sept. 15th, 1912.

Phototyping: Adversaria III., pp. 451—500 in press.

Miscellanea Theologica, *Swedenborgiana* II., and *Arcana* I. have been arranged for press, but before taking the MSS. apart the Libra-

rian desires that the following Codices,, taken apart 40 years ago during the photolithographing, shall be rebound: Codices 65, *De Cerebro* 51 and 68, *De Cultu*, 89 and 90 *Annotated Bibles*, 113—114, *Arcana Index*, 14, *De Conjugio*, 46, *Index to De Amore Conjugiali*, and *Swedenborg's Letters.*

If any of the Societies desires that one or more of the above MSS. shall be phototyped, please communicate with the undersigned at an early date for the Librarian desires that if any of the MSS. in question are to be phototyped it shall be done before they are rebound.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana:

New Items:

Stockholm, Sept. 14th, 1912.

ALFRED H. STROH.

Report of work in Sweden for the month ending Oct. 15th, 1912.

Phototyping: Statements for the following amouts have been sent to the Swedenborg Society, London.

Adversaria III., pp. 405—504 . . . . . Kr. 1,300
Miscellanea Theologica, pp. 55—102 . . . . . » 600

Besides the progress indicated above, pp. 505—450 of *Adversaria* III. have been photographed.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: In preparing the new *Chronological List of Swedenborgiana*, which is nearly completed, a great number of new memorials by and concerning Swedenborg have recently been found in the State Archives, Stockholm.

New Items: During a recent visit to Grönsöö Castle in Lake Mälar I have had an oppurnity of inspecting hitherto unknown oil potraits of Swedenborg's sister Hedvig (not of Anna, as previously stated in the January report), and of Swedenborg's nephew and niece, Eric and Margareta Benzelius, the children of Swedenborg's sister Anna and Eric Benzelius, Jr.

Stockholm, Oct. 15th, 1912.

ALFRED H. STROH.

Report of work in Sweden for the month ending Nov. 15th, 1912.

Phototyping: Adversaria III., pp. 505—600, in press.

Miscellanea Theologica, the theological letters are being arranged for press.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: The report on *A Chronological List of Swedenborgiana*, including all old materials as contained in Dr. R. L. Tafel's *Documents concerning Swedenborg*, and numerous additions discovered since 1877, is being sent by instalments to the Swedenborg Society and to the Academy of the New Church, those bodies having communicated with me in response to the proposal in the monthly report for August.

New Items: The portraits at Grönsöö, mentioned in the monthly report for September, have recently been taken to Stockholm and photographed.

Stockholm, Nov. 9th, 1911.

ALFRED H. STROH.

Report of work in Sweden for the month ending Dec. 15th, 1912.

Phototyping: Adversaria III., pp. 601—799, in press. This is the last section of the *Adversaria*.

The theological MSS., including Swedenborg's theological letters, for *Miscellanea Theologica*, photographed.

Swedenborgiana II. and *Arcana* I. will be continued with after final replies have been received from the Societies with regard to the phototyping of the MSS. mentioned in my report for September. The Librarian refuses to take apart new MSS. before the old ones have been rebound. The Swedenborg Society of London has requested the holding over of Codices 89 and 90, *Swedenborg's Annotated Bibles*, but no directions have been received from the other Societies interested in the phototyping.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: A copy of *The Swedenborg Archives*, Part I., just published in an edition of 500 copies, and containing »A Series of Reports concerning Investigations and Proceedings in Sweden from 1902 to 1912», is being forwarded to all the Societies to which the monthly reports are sent.

New Items: In the *Chronological List of Swedenborgiana*, referred to in the previous report, a great many new items have been listed during the past month.

Stockholm, December 16th, 1912.

ALFRED. H. STROH.

Report of work in Sweden for the month ending Jan. 15th, 1913.

Phototyping: A bill for *Adversaria* III., pp. 505—799, sent to the Swedenborg Society, London . . . . . Kr. 3,701.25

The *Index Biblicus*, 3 vols. folio, and the *Adversaria*, 3 vols. folio having now been phototyped, will be bound and distributed as soon as the last pages are thoroughly dry.

Nearly all materials for *Miscellanea Theologica* in the Library of the Royal Swedish Academy of Scienses, the Royal Library, the State Archives, and elsewhere having now been photographed, the volume will soon be completed.

A comprehensive plan for rebinding the MSS. taken apart over 40 years ago for the photolithographing, and for other necessary binding and repairs, has been submitted to and accepted by Dr. J. A. Bergstedt, Librarian of the Royal Swedish Academy of Sciences. No further replies as to the rebinding of the MSS., referred to in my reports for September and December having been received, the rebinding of Codex 65, *De Cerebro*, has been undertaken, and the other MSS. will be proceeded with unless further directions are received from the Societies. I therefore once more draw attention to the great importance of considering the advisability of phototyping certain of the MSS. before they are rebound, as the Librarian is opposed to taking them apart again.

The MSS. for *Arcana* I. will now be taken apart one by one, and as two new boxes with glass fronts will be employed for the photographing still more rapid progress will be made.

For *Swedenborgiana* II. there will be certain additions as new letters and memorials by Swedenborg have recently been found.

Scientific Works: Opera de Rebus naturalibus, Vols. IV. and V. in press.

Swedenborgiana: The Chronological List of Swedenborgiana has been typewritten and forwarded to London and Bryn Athyn. It will now be arranged in strict chronological order and prepared for press with a view to its publication in *The Swedenborg Archives*. The quantity of new »Documents concerning Swedenborg» already listed is unexpectedly great, so that our sources of original information concerning Swedenborgiana will now be doubled or trebled, giving us a in many respects new conception of Swedenborg's life and development.

New Items: A hitherto unknown signed oil portrait of Swedenborg by a Swedish artist, Boman, was secured last summer by the Northern Museum. Although similar to the »blue coat» portraits of Swedenborg dating from the period 1760—1770, this newly found portrait is

probably of somewhat earlier date than the other »blue coat» portraits.

Stockholm, Jan. 14th, 1913.

ALFRED H. STROH.

Reports of work in Sweden for the month ending Feb. 15th, 1913.

Phototyping: Miscellanea Theologica. Additional theological documents are being collected in Sweden and abroad.

Arcana I., pp. 1—99, photographed and in press.

Codex 65, *De Cerebro*, and Codices 51 and 68, *De Cultu*, have been handsomely rebound in parchment by Hedberg, and for *Arcana* I. Codices 10 and 8 have been taken apart for the phototyping.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: The *Chronological List of Swedenborgiana* having been typewritten, and sets forwarded to London and Bryn Athyn, the third set, at Stockholm. has been out up and pasted on slips, the 900 items being filed and strictly chronological order from the time of Swedenborg's birth 1688 until the years shortly after his death in 1772. Several hundred new items have also been added, and the slips are being completed and filed according to the following plan:

A Chronological List of Swedenborgiana referring to Works, Documents and Miscellaneous information by and concerning Emanuel Swedenborg * 1688 † 1772.

Appendix I. Notes on genealogical and family and miscellaneous documents.

Appendix II. Portraits of Swedenborg, his relatives, contemporaries, etc.

Appendix III. Swedenborg's Library and miscellaneous property.

Index of Items according to location.

Index of Items, authors and subjects.

The scope of this *List* will be understood when it is known that it contains references to all the items in Tafel's *Documents* and in the later literature, plus all the items discovered in Sweden and other countries since 1902 by the editor and his assistants. Every effort is being made to extend and perfect the *List*, the whole being treated in a strictly bibliographical manner for publication in *The Swedenborg Archives.*

New Items: The new items of reference to Swedenborgiana are being entered as above and copies of documents and testimony are be-

ing typewritten and filed according to the same order as that employed in the List.

Stockholm, Feb. 17th. 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending March 15th, 1913.

Phototyping: Miscellanea Theologica. The latter portion of this volume is being prepared for press.

Arcana I., pp. 100—200 in press.

Codex 14, *De Conjugio*, has been bound by Hedberg.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: The Chronological List of Swedenborgiana has been still further completed by Miss Odhner, who has just visited Gothenburg and entered the new materials found in the Consistory Archives, and by myself during a recent visit to Helsingfors, Finland, in order to investigate the archives of the Nordenskiöld family from Frugård.

New Items: The new items among the Frugård Documents are of first class interest for the early history of the New Church in Europe shortly after Swedenborg's death. There are several collections of letters, including many by prominent early New Churchmen such as Beyer, Hartley, August Nordenskiöld, Carl Fredric Nordenskiöld, C. B. Wadström, Pernetty, and others; also circulars and minutes of the Exegetic and Philanthropic Society, and numerous MSS. illustrating the early thought and life of the New Church. — Among the documents is a MS. copy of Swedenborg's *Coronis*, differing in several respects from the edition published by Dr. J. F. I. Tafel in 1841 in *Eman. Swedenborgii Diarii Spiritualis Edidit Jo. Fr. Em. Tafel, Tubingae, 1846.*

Stockholm, March 18th, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending Aprit 15th, 1913.

Phototyping: A bill for *Arcana* I., pp. 1—300, sent to the Swedenborg Society London . . . . . Kr. 3,750

Miscellanea Theologica. Certain new MSS. recently discovered will be included in this volume.

Arcana I., pp. 201—300, in press.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: Numerous items have during the past month been entered in the *Chronological List* at Upsala, Linköping and Jönköping.

New Items: Among the items entered during the past month in the *Chronological List* are great quantities hitherto unknown to students of Swedenborg.

Stockholm, Apr. 16th, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending May 15th, 1912.

Phototyping Miscellanea Theologica. In connection with the *Chronological List of Works and Documents, by Emanuel Swedenborg*, referred to below, I am completing the Table of Contents for this collection of miscellaneous MSS.

Arcana I., pp. 301—545 photographed, being Codices 8, 10, 80, 9. The volumes are now being rebound, and as in the case of the other MSS. recently rebound by Hedberg, the bill will be forwarded to the Swedenborg Society.

Titles and Prefaces for *Index Biblicus* and *Adversaria* have been drafted, and will be submitted for approval this month during my proposed stay in London *en route* for a brief visit to America in order to attend the Church Meetings and to forward the work in Sweden. The expenses for the proposed journey have been defrayed by the generosity of John Pitcairn, Esq.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: The Foundations for the final *Chronological List of Swedenborgiana* are being laid by the typewriting of a *Chronological List of Works and Documents by Emanuel Swedenborg*, soon to be submitted to the societies which are bearing the expenses for this work and for copying documents.

New Items: All previous notes and collections made during my investigations in Europe and America since 1902 are being entered in the *Chronological List*, which thus records a very large quantity of new important material, including numerous new works and documents by Swedenborg, and a great mass of new documents *concerning* Swedenborg.

Stockholm, May 13th, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending June 15th, 1913.

Phototyping: Arcana I., pp, 301—400, in press.

Arcana II., pp. 1—259, photographed (Codex 15).

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: The *Chronological List* forwarded by instalments to London, Bryn Athyn and Cambridge.

New Items: The proposed journey to America postponed on account of pressing business in Sweden and London.

Stockholm, Sept., 30th, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending July 15th, 1913.

Phototyping: Arcana I., pp. 401—545, in press.

A bill for *Arcana* I., pp. 301—545, sent to the Swedenborg Society, London . . . . . Kr. 3,125.50

Scientific Works: Opera de Rebus Naturalibus, Vols, IV. and V. in press.

Swedenborgiana: The *Chronological List* having been typewritten und distributed to London, Bryn Athyn and Cambridge, the typewriting of the unpublished bibliographical references of the Rev. James Hyde was undertaken in London during July at the Swedenborg Society's House, and much of the work accomplished by August. An article concerning these important unpublished references has been written for the New Church Quarterly.

New Items: At the invitation of the Swedenborg Society I travelled to London and addressed the annual meeting on June 23rd on the work in Sweden. — At several meetings unfinished business was transacted and permission was received to forward, to the Library of Upsala University the unpublished MSS. of Swedenborg's *The Brain*, Vols. III. and IV., as edited by Dr. R. L. Tafel and the Rev. James Hyde, and to the Library of the Royal Swedish Academy of Sciences the collections of the same investigators for the *Documents concerning Swedenborg*.

A complete statement concerning these items will appear in connection with the contribution to the *New-Church Quarterly* referred to above.

Stockholm, Sept. 30th, 1913.

ALFRED H. STROH.

Roport of work in Sweden for the month ending August 15th, 1913.

Phototyping: Arcana II., pp. 222, Codex 16, photographed.

The proposed contents of *Miscellanea Theologica* as prepared by the undersigned and the Rev. I. Tansley will be followed in completing the phototyping of that volume.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: A reolution adopted by the Swedenborg Society's Council with reference to the typewriting of the *Chronological List* reads as follows:

> Resolved, that the preparation of the typewritten copy of the Chronological List be proceeded with, subject to 100 Pounds per annum for three years necessary to cover the expenses to the Society being raised and to assurances being received that from other sources the sum of 200 Pounds per annum for three years will be contributed.

New Items: The work of typewriting the remainder of the Rev. James Hyde's bibliographical references was left in the hands of Mr. Paul Blaise on my departure from London in August. The references mentioned, together with the collections for the *Documents concerning Swedenborg* referred to in my previous report, will be of great value in still forther extending the *Chronological List* which will be revised for press as its publication has been suggested, possibly in the *New-Church Quarterly.*

Stockholm, Sept. 30th, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending Sept. 15th, 1913.

Phototyping: Arcana II., pp. 200, Codex 17, photographed.

Scientifc Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: Having returned to Sweden in the beginning of August and arranged for the acceleration of the phototyping, I accompanied Bishop and Mrs. N. D. Pendleton and Mr. John Pitcairn on their travels to Holland, Belgium and France, during which various Swedenborgiana were investigated and their phototyping arranged for. Returned to Sweden in the middle of September.

New Items:

Stockholm, Sept. 30th, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending Oct. 15th, 1913.

Phototyping: Arcana II., pp. 1—150, in press.

A bill for *Arcana* II., pp. 1—120, sent to the Swedenborg Society, London . . . . . Kr. 1,500

Also Hedberg's bill for rebinding Swedenborg's MSS. . » 152

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V in press.

Swedenborgiana: The Council of the Swedenborg Society, and Mr. John Pitcairn, representing the Academy of the New Church, having agreed to the resolution concerning the typewriting of *Chronological List*, etc. referred to in the monthly report for August, — and favorable action by the New Church Theological School and the General Convention being hoped for, — the work of typewriting the *Chronological List* and necessary documents connected with the work has been undertaken. By this arrangement the expenses for the typewriting of the editor's correspondence, etc., and for any additional typewriting in connection with the work in Sweden, will be met without any extra charges. Miss Cyriel Lj. Odhner and the Rev. J. E. Rosenquist are now engaged upon the *Chronological List* and the copying of documents. The receipts and expenses for the financial year will be accounted for in the next annual report, the expenses having hitherto been met by the generous contributions of Mr. John Pitcairn.

New Items:

Stockholm, Sept. 30th. 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending Nov. 15th, 1913.

Phototyping: Arcana II., pp. 151—200, in press. Codex 18 photographed.

The binding of *Index Biblicus* and *Adversaria* is in progress, and the contents of *Miscellanea Theologica* have been finally arranged for press.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: The *Chronological List* is being revised and extended.

New Items: A hitherto unknown oil portrait of Jesper Swedberg »Natus A. 1656 den 22 februari Depigatus A. 1721 den 16 Augusti»

has been discovered in the possession of Miss Elin Blomqvist, Tenhult, near Jönköping.

Stockholm, Nov. 4th, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending Dec. 15th, 1913.

Phototyping: Arcana II., pp. 201—550, in press.

In order to increase the amount phototyped per *annum* so as to finish the works undertaken by about 1916, the printer has employed a third press. The remainder of Vol. II. of the *Arcana* completes *Genesis*. There remain two volumes of *Exodus*, and one volume of *Indexes*, the whole work being divided into five volumes as below.

Vol. I. will contain Codices 8, 10, 80, 9.
» II. » » » 15—19.
» III. » » » 20—23.
» IV. » » » 24—26.
» V. » » » 112, 113—114.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

Swedenborgiana: The *Chronological List* is being revised and extended.

New Items: A typewritten collection, 1114 pages folio, of the late Rev. James Hyde's unpublished *Chronological Indexes*, has been received from London from Mr. Paul Blaise, employed by me last July to typewrite these valuable references to Swedenborg's life and times by the compiler of the *Bibliography*. Although incomplete, the Chronological Indexes might be edited and published either separately or in connection with the *Chronological List*, the serial publication of which has been proposed.

Stockholm, Dec. 1st, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending jan. 15th, 1914.

Phototyping: Arcana II., pp. 551—800, in press.

A bill for *Arcana* II., pp. 121—600, sent to the Swedenborg Society, London . . . . . Kr. 6,000

Due to larger appropriations, the speed of the phototyping has been greatly increased, so that an average of about 125 pages per month may if necessary be printed during the current financial year.

The *Index Biblicus* and *Adversaria* will be bound and distributed

during the coming quarter, the remainder of the *Adversaria* having recently been delivered to the binder.

The work on the *Arcana* is proceeding at full speed, and the remaining manuscripts for the volume *Miscellanea Theologica* are being prepared for press.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V., in press.

Swedenborgiana: The *Chronological List* is being revised and extended.

New Items: The serial publication of the *Chronological List* has been under consideration by the *New-Church Quarterly*, it having been proposed that 24 pages be printed in Sweden and included with each issue. A second proposal has also been received from the *New-Church Magazine*, which offers to print 8 pages monthly, the type being kept standing in order to make publication in book form possible. In view of these proposals, and of my original plan to publish the *List* part by part in the *Swedenborg Archives*, the question of whether the work should be printed and published in England or Sweden has arison. The advice of the contributing institutions is solicited.

Stockholm, Dec. 30th, 1913.

ALFRED H. STROH.

Report of work in Sweden for the month ending Feb. 15th, 1914.

Phototyping: Arcana II., pp. 801—900 in press.

Arcana III., has been prepared for press and the photographing has been begun.

Scientific Works: Opera de Rebus Naturalibus, Vols. IV. and V. in press.

The *Worship and Love of God*, has been published at Boston in a revised and completed edition.

Swedenborgiana: The *Chronological List* is being revised and extended with the assistance of my secretary, Miss Cyriel Lj. Odhner, who has returned from America.

New Items: According to instructions received from the Swedenborg Society, the Chronological List will be revised for press and issued serially in the *New-Church Magazine*.

Stockholm, Feb. 3rd, 1914.

ALFRED H. STROH.

Report of work in Sweden for the month ending March 15th, 1914.

Phototyping: Arcana II., pp. 902—1018, in press.

The photographing of *Arcana III.*, being Codices 20—23, is proceeding, Codex 20 is photographed and prepared for press, and since the last report, ending Feb. 15th, 1914, 250 pp. of Codex 21 have been photographed.

The rebinding of Swedenborg's MSS. is continuing, and since October, 1913, Codices 9, 15, 16, 17 of *Arcana Coelestia* have been rebound by Hedberg.

Stockholm, March 3rd, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending April 15th, 1914.

Phototyping: Arcana II., pp. 1029—1148 (end of Vol. II.), in press.

The photographing of *Arcana III.*, is proceeding. Since the last report, Codex 21 has been finished and prepared for press and the photographing of Codex 23 has been commenced.

Codex 18 of *Arcana Coelestia* has been rebound by Hedberg.

Stockholm, March 31st, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending May 15th, 1914.

Phototyping: Arcana III., pp. 1 – 136, in press.

The photographing of *Arcana III.* is proceeding. Codex 22 has been finished and prepared for press and the photographing of Codex 23 has been commenced.

Stockholm, April 30th, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending June 15th, 1914.

Phototyping: Arcana III., pp. 137—264, in press.

The photographing is proceeding, and since the last report, Codex 23 (end of *Arcana*, Vol. III.) has been finished and prepared for press.

Stockholm, May 31st, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending July 15th, 1914.

Phototyping: Arcana III., pp. 265—384, in press.

Since the last report, the first MS. (= Codex 24) of *Arcana*, Vol. IV., has been photographed and prepared for press.

The rebinding of the Swedenborg MSS. is continuing, and Codices 19 and 20 have been rebound.

Stockholm, June 30th, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending Aug. 15th, 1914.

Phototyping: Arcana III., pp. 385—490 in press.

Stockholm, July 31st, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending Sept. 15th, 1914.

Phototyping: Arcana III., pp. 491—580 in press.

Stockholm, Aug. 31st, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending Oct. 15th, 1914.

Phototyping: Arcana III., pp. 581—760 in press.

Since the last report, Codex 25 of *Arcana* (Vol. IV.), has been photographed and prepared for press.

The rebinding of the Swedenborg MSS. is continuing, and Codex 22 has been rebound.

Stockholm, Sept. 30th, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending Nov. 15th, 1914.

Phototyping: Arcana III., pp. 761—944 in press.

The photographing is proceeding and since the last report, Codex 26 (end of *Arcana*, Vol. IV.) has been photographed and prepared for press.

The rebinding is being continued, and Codex 21 has been rebound.

Stockholm, Oct. 31st, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending Dec. 15th, 1914.

Phototyping: Arcana III., pp. 945—1015 (end of Vol. III.), and *Arcana IV.*, pp. 1—104, in press.

Since the last report, the first 300 pages (part of Codex 112) of *Arcana*, Vol. V. have been photographed and prepared for press.

The rebinding is continuing, and Codex 23 has been rebound.
Stockholm, Nov. 30th, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending Jan. 15th, 1915.

Phototyping: Arcana IV., pp. 105—304, in press.

Since the last report, rest of *Arcana*, Vol. V. (the last volume of the whole work, being Codices 112, 113 and 114) has been photographed and prepared for press.

Codex 24 has been rebound.
Stockholm, Dec. 31st, 1914.

GRETA EKELÖF.

Report of work in Sweden for the month ending Feb. 15th, 1915.

Arcana III., distributed to England and America in proof volumes. *Arcana IV.*, up to p. 710, conclusion, in press. *Arcana V.*, up to p. 70, in press.

Upsala, March, 1st, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending March 15th, 1915.

Arcana IV., printed; to be distributed in proof volumes when dry. *Arcana V.*, pp. 71—200, in press.

Apocalypsis Explicata, Vol. I., pp. 1—208, photographed, and the whole work arranged for press in three volumes.

22 pp. of proof titles and contents for *Index Biblicus*, *Explicationes in Verbum seu Adversaria*, and *Arcana Coelestia*, submitted to the London Swedenborg Society for approval.

Upsala, March 5th, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending April 15th, 1915.

Arcana V., pp. 201—747, the concluding portion of this volume, the last, in press.

Apocalysis Explicata, Vol. I., containing Codices 27—29, photographed and prepared for press.

The editor's office removed in February, from Östermalmsgatan 19, Stockholm, to Tegnérsgatan 37; in March to Upsala, Bredgränd 1, and in April to Vasagatan 1 C, as above.

For detailed information see forthcoming annual report for 1914—1915.

Upsala, March 8th, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending May 15th, 1915.

Apocalypsis Explicata I., pp. 1—150, in press.

Apocalypsis Revelata and *Miscellanea Theologica* prepared for press.

The eleven volumes of *Index Biblicus*, *Explicationes in Verbum seu Adversaria*, and *Arcana Coelestia*, are being finally revised and bound for distribution unless the war interferes.

For new plans for phototyping, *Opera Quaedam*, and *The Swedenborg Archives*, see annual report, about to be distributed.

Upsala, April 3rd, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending June 15th, 1915.

Apocalypsis Explicata I., pp. 151—250, in press.

Apocalypsis Explicata II., Codex 30 photographed.

Miscellanea Theologica, pp. 175 of Index to *Apocalypsis Revelata* and *De Amore Conjugiali* photographed.

Instructions received today from London to include above mentioned Index in *Miscellanea Theologica*, and to bind and distribute *Index Biblicus*, *Adversaria*, and *Arcana* with Latin and English prefatory materials.

Upsala, May 1st, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending July 15th, 1915.

Apocalypsis Explicata I., pp, 251—500, in press.

Apocalypsis Explicata II., Codices 31—32, photographed.

Miscellanea Theologica, pp. 76—150 of Codex 7 photographed.

The phototyping firm will finish the works in press early next year according to their recent calculations. For detailed information concerning the phototyping, scientific works, and *Swedenborg Archives*, see the editor's *Addendum* to Annual Report about to be distributed.

Upsala, June 1st, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending August 15th, 1915.

Apocalypsis Explicata, Vol. I., printed; Vol. II., photographed and pp. 1—150 printed; Vol. III., pp. 1—260 photographed.

Miscellanea Theologica, pp. 151—200 of Codex 7 photographed.

For *Addendum* to Annual Report and Appeal on behalf of the work in Sweden see Part II. of *The Swedenborg Archives* now in press and ready for distribution in the near future.

Upsala, July 1st, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending Sept. 15th, 1915.

Phototyping: Apocalypsis Explicata, Vol. II., pp. 151—200, printed; Vol. III., remainder of volume photographed.

Miscellanea Theologica, pp. 201—225 of Codex 7 photographed.

As stated in monthly report dated June 1st, and recently confirmed by Lagrelius & Westphal in letters to the Swedenborg Society's Secretary and Treasurer, the phototyping is calculated by the printer to be finished in the first part of next year. The editor has therefore requested the Swedenborg Society to continue the usual quarterly payments until July 1st, 1916. The series of 15 phototyped volumes will be fully revised for binding and distribution, and the prefatory materials prepared in a single harmonious series as the revising proceeds, the titles in Latin and English for the 15 volumes having been revised and forwarded to London. Plans for phototyping the remainder of Swedenborg's MSS. will be submitted in *The Swedenborg Archives*, Part II., and the editor also intends to visit England and America in order to advance the phototyping and the two lines of work reported during the years 1911—1914 in the monthly reports and referred to below.

Scientific Works: Opera Quaedam de Rebus Naturalibus, the edition of Swedenborg's scientific works published by the Royal Swedish Academy of Sciences, will now be continued according to the original plans by the editor. The Swedenborg Committee's labors came to a close in May and the editor has been engaged by a vote of the Academy of Sciences to continue the work at the rate of kr. 20 per sheet. It is hoped that the Swedenborg Fund of the Academy will be increased by copies sold and subscriptions from abroad as well as in Sweden.

Vols. III. and IV. of *The Brain*, will be edited for press by Professor O. M. Ramström and the undersigned at Upsala University Library.

Swedenborg Archives: The results of Tafel, Hyde, and the undersigned relating to unpublished investigations of Swedenborgiana, will be edited in *The Swedenborg Archives*, Part II. of this series being in press, and the succeeding parts and volumes being planned to contain the complete bibliographical, biographical, historical and documentary results collected in Sweden and abroad since 1902.

Upsala, July 31st, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending Oct. 15th, 1915.

Phototyping: Apocalypsis Explicata, Vol. II., pp. 201—260, printed.

Miscellanea Theologica, pp. 226—255 of Codex 7 photographed,

According to the printer's calculations the works scheduled in 1916 will be finished by next spring, but in order to forward new work later on the photographing should be begun during the winter. The editor is therefore about to leave for London in order to submit detailed plans for finishing *Miscellanea Theologica* during the winter and for continuing with 6 additional volumes, namely, 2 containing Swedenborg's Bibles and supplementary theological papers, 2 volumes of scientific and philosophical papers and notes, and 2 volumes of letters, memorials, and miscellaneous documents. I recommend that the new work be authorized by the united societies and invite correspondence. If the London societies cannot proceed because of untoward conditions I recommend that the American societies proceed independently, the London Swedenborg Society supporting the editing of *The Brain* and *Documents* as intended in 1913 when the necessary MSS. were taken to Sweden.

Scientific Works: Opera Quaedam de Rebus Naturalibus, Vol. IV., in press at Stockholm.

The Brain, Vols. III. and IV. — Professor O. M. Ramström, when consulted recently, reaffirmed his willingness to assist the editor of *Opera Quaedam* in simultoneously editing for press during the coming years Vols. III. and IV. of *The Brain*, the MSS. of which as left by Tafel and Hyde are preserved in the Upsala University Library, having been deposited there in 1913 by the Swedenborg Society.

Swedenborg Archives: The papers and collections of Tafel, Hyde, Odhner, and of the undersigned, are being edited at Stockholm and Upsala according to the numbers of the *Chronological List* for final publication in *The Swedenborg Archives.* See further the editor's

Addendum and *Appeal*, to be distributed from London upon my arrival.

Upsala, August 15th, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending Nov. 15th, 1915.

Phototyping: Apocalypsis Explicata. Vol. II., pp. 261—350, printed. *Miscellanea Theologica*, pp. 256—311 of Codex 7, finishing this MS., photographed. Many of the theological documents originally intended for this volume being excluded, the expense will be reduced so that the printer's bills for the present year will be about kr. 26,000 in order to finish the work, with a further expenditure for binding the twelve phototyped volumes, kr. 12,540, the additional expenses for 1915—1916, not debited hitherto, will exceed 2,000 Pounds, excluding editorial and shipping expenses.

Scientific Works: The editing of the Stockholm edition of *The Brain* will now be resumed afteer the editor's visit to London during the early part of September.

Swedenborg Archives: Most of the materials for the *Addendum* and *Appeal* referred to in recent monthly reports were included in the extended Annual Report typewritten and distributed in August before the editor's visit to England. The publication of Part II. of *Archives* being delayed, the *Appeal* is included below in condensed form.

A large collection of typewritten documents made under *Chronological List* accounts for 1913—1916 being now distributed, the audited accounts for 1913—1915 are being sent to London, Bryn Athyn and Boston and the work edited for the *New-Church Magasine.*

Appeal on behalf of the work in Sweden.

The proposed continuation of the phototyping after the volumes in hand being unacceptable to the Swedenborg Society, the decision with regard to continuing the series by the publication of six additional volumes, as proposed in recent reports, must be left with the American societies, and possibly also the question of eontinuing the editor's salary for the work in Sweden. Both of the London bodies, the Swedenborg Society and Conference of the New Church, are averse to investing any more money in »big schemes» in Sweden. The phototyping since 1910 has cost much more than anticipated, and a loan of 1,000 Pounds has been necessary in these hard times, with another 2,000 Pounds of expenses for the present year! The editor has

therefore offered to go on for the present without salary for the phototyping, but the Swedenborg Society having commissioned him to arrange for the editing of *The Brain* in collaboration with Professor Ramström of Upsala, and about one half of the *List* funds for 1915—1916 being still available for use by the editor personally to finish the work, it is hoped that the present difficulty can be tided over and a *modus vivendi* found until the annual meetings in 1916. The editor's next annual report will go thoroughly into all points so as to prepare a new basis for continued work according to the three lines, phototyping, scientific works, and *Swedenborg Archives*. In the meantime I appeal to the goodwill of the united societies and invite correspondence.

Upsala, Sept. 30th, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending December 15th, 1915.

Phototyping: Apocalypsis Explicata, Vol. II., pp. 351—450, close of volume printed.

Miscellanea Theologica, photographing of certain smaller MSS. finished and the volume ready for press as rearranged according to instructions from London.

Unless new photographing and phototyping be arranged for and begun this quarter the printer must dismiss some of his employees now engaged on the phototyping work, and later the general progress of the new work contemplated in recent reports will be interrupted with a consequent loss of time, labor, and money. I request further instructions from the American societies, suggesting that the work be managed as before from London and that the Swedenborg Society and Conference take a number of copies of the six new volumes contemplated when they are printed so that the sets in England will be complete. I also suggest that the phototyped series be arranged in a single consecutive set of volumes as was done with the Photolitographed Manuscripts published 1869—70. During my recent visit in London the drafted prefaces for the present series were revised. The numerous editorial notes intended by me may be included in the *Chronological List*, and the titles, prefaces and tables of contents will then be ready for publication this quarter, permitting the works printed to be bound and distributed.

Scientific Works; Simultaneously with the editing of the texts of *The Brain* for the Stockholm edition the MSS. of Tafel and Hyde for Vols. III. and IV. of the work may be edited at Upsala by Pro-

fessor Ramström and the editor in the Swedenborg Room of the Upsala University Library.

Swedenborg Archives: All of the MSS. for the work on *The Brain* and for *Documents concerning Swedenborg* are being arranged this quarter in the Swedenborg Room just opened in the above mentioned Library, and it is hoped that the British and American societies will donate books so as to amplify the collection of Swedenborgiana in Upsala, Swedenborg's own Alma Mater. For an account of present conditions in Sweden in this and other connections see an article contributed to the *New-Church Weekly* on "Swedenborg at Stockholm and Upsala".

Upsala, Oct. 2nd, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending Jan. 15th 1915.

Phototyping: Apocalypsis Explicata, Vol. III., pp. 1—120, printed.

Miscellanea Theologica, up to p. 100 printed.

In order to make arrangements for continuation of phototyping, and payment of editor's salary for the work in Sweden after this quarter, the editor has arranged to sail for America on Dec. 11th unless satisfactory solutions have been made before that date by letter or cable.

Scientific Works: For detailed informations *re* scientific works, etc., see the documents distributed with »An Appeal to the Swedenborg Scientific Association and New Church Printing Societies on behalf of the Work in Sweden».

Swedenborg Archives: The article on "Swedenborg at Stockholm and Upsala", intended for *New-Church Weekly*, will be distributed as a continaution of the *Appeal.*

Upsala, Nov. 15th, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending Feb. 15th, 1916.

Phototyping: Apocalypsis Eplicata, Vol. III., pp. 121—200, printed.
Miscellanea Theologica, pp. 101—150, printed.

The editor appeals to the American societies for payment of phototyping debt, kr. 18,611.87, and for continuation of salary from Oct. 1st to July 1st, as the money cannot be raised in London. The Latin prefatory materials having been revised and extended the publication of the series will begin early in 1916. For details *re* phototyping, scientific works, and *Swedenborg Archives*, see continuation of *Appeal*, about to be distributed.

Upsala, Sweden, Dec. 31st, 1915.

ALFRED H. STROH.

Report of work in Sweden for the month ending March 15th, 1916.

Phototyping: Apocalypsis Explicata, Vol. III., pp. 201—300, printed.
Miscellanea Theologica, pp. 150—200, printed.

The titles, etc., being now ready for press, the binding of the phototyped series will begin this quarter and continue until the summer after the last volumes in press shall have been printed and dried.

Scientific Works: The prefaces and notes for Vols. IV. and V. of the Stockholm series are being prepared and the results will also be used in Swedish as a thesis at the University of Upsala with the title *Emanuel Swedenborg's Philosophy of Nature.*

Swedenborg Archives. The *Chronological List* and connected documents are being revised for publication in the *New-Church Magazine.*

Upsala, Sweden, Jan. 31st, 1916.

ALFRED H. STROH.

Report of work in Sweden for the month ending April 15th, 1916.

Phototyping: Apocalypsis Explicata, Vol. III., pp. 301—400, printed.
Miscellanea Theologica, pp. 201—250, printed.

The printing has cost since 1910 kr. 91,124.62, of which kr. 72,512.75 have been received, leaving unpaid kr. 18,611.87, according to monthly

report dated Dec. 31st, the figures having been supplied by Lagrelius & Westphal to the editor and duly forwarded to England and Amerika. The editor has not been paid for five months, but encouraging letters have been received from Boston and Bryn Athyn. The printer and editor have this quarter supplied detailed information to Mr. E. C. Bostock, Bryn Athyn, Pa., U. S. A., *re* phototyping business, and trust that "the whole question will be straightened out soon".

Upsala, Sweden, Feb. 29th, 1916.

ALFRED H. STROH.

Report of work in Sweden for the month ending May 15th, 1916.

Phototyping: Apocalypsis Explicata, Vol. III., pp. 401—503, end of volume and work, printed.

Miscellanea Theologica, pp. 251—275, printed.

Payments of the work in Sweden have been resumed and the editor will finish the phototyped series during the summer before leaving Sweden on an extended visit to America in order to perfect arrangements for new work. The intended contributions on "Swedenborg at Stockholm and Upsala", with "Continuation of Appeal" have been incorporated in the editor's Annual Report about to be distributed.

Upsala, Sweden, March 15th, 1916.

ALFRED H. STROH.

Report of work in Sweden for the month ending June 15th, 1916.

Phototoping: Miscellanea Theologica, pp. 276—449, printed, being end of volume and work of phototyping 1910 series.

According to instructions from London the phototyped series will be bound with a general title suggested by the editor, *Autographa Emanuelis Swedenborgii.* Arrangements are being perfected in England and America for paying the phototyping debt and the editor's grants to June 30th.

New proposals for continuing the phototyping have been submitted in the Annual Report distributed in March, and the present status of the scientific and documentary work will be discussed in letters and in the concluding portion of Annual Report entitled "Swedenborg at Stockholm and Upsala",* about to be distributed.

Upsala, Sweden, May 9th, 1916.

ALFRED H. STROH.

* Printed *in extenso* in *New-Church Review*, 1917, pp. 381—400,

Addendum to Monthly Reports, 1911—1916.

In bringing the Monthly Reports for 1911—1916 to a conclusion certain points should be emphasized so that a true perspective of the history of the work in Sweden may be obtained.

The Annual Reports since 1902 explain the general course of the work, while the Monthly Reports show in detail how the phototyping, etc., has progressed at an increasing rate *per annum*. This is further indicated by the Appendices to the Annual Report distributed last March. The concluding section of that report, on "Swedenborg at Stockholm and Upsala",* will present in the form of a popular article a résumé of the present condition and possibilities of the work in Sweden.

The past year has been unprecedented in the number of pages phototyped, but also in the production of a large phototyping debt with accompanying difficulties for the printer and editor. Unfortunately no adequate provision for the work was made before the annual meetings in England and America. The editor's vigorous propaganda finally resulted in promised relief, the phototyping debt is being reduced, and subject to the contributing institutions continuing their contributions for this purpose the editor has been promised an honorarium of equal value to his salary from Oct. 1st, 1915, to June 30th of the present year. In the meantime the editor has visited England and proceeded with the work for over half a year without support from the societies, and no provision for the continuation of the work in Sweden after June 30th has as yet been made either in England or America. No more phototyping can be authorized in England, but there is some hope that the American societies will sooner or later have the remaining MSS. of Swedenborg reproduced. The editor has always been supported for the phototyping, and therefore the present crisis in the history of the work requires a speedy solution.

Fortunately an invitation has been received from Mr. John Pitcairn to spend a year in America in order to reorganize the work, and unless other arrangements are made before next September the editor will leave for Bryn Athyn as intended. I do not know whether any of the societies will authorize more phototyping for this year, or whether the Swedenborg Society and other bodies will be able to continue during the coming year their support of the scientific and documentary work already authorized. The editor has reported fully about this in special communications and is ready to proceed with the scientific

---

* Printed *in extenso* in *New-Church Review*, 1917, pp. 381—400.

texts and documentary work either by themselves or in addition to new phototyping, returning to Stockholm next quarter after recuperating in Upsala during the past year. I recommend that funds be appropriated in good time for the continuation of the work whether I visit America or not, for the conditions may be such next autumn that it will be dangerous or impossible to leave Europe.

Thanking the societies for their support in the past, and trusting that the work will be continued, I remain,

Yours faithfully,

ALFRED STROH.

Upsala, Sweden, May 10th, 1916.

Annual Report of Work in Sweden, 1915—1916.

The present Annual Report is a continuntion of an extended "Appeal" on behalf of the work in Sweden, dated Nov. 1st, 1915. Before describing below the investigations of "Swedenborg at Stockholm and Upsala", which outline the history and possibilities of the work in Sweden, the general business policy and editorial plans for the phototyping of Swedenborg's Manuscripts will first be discussed in continuation of previous reports and appeals sent out last year.

Continuation of "Appeal".

"An appeal to the Swedenborg Scientific Assosiation and New Church Printing Societies on behalf of the Work in Sweden" explained in some detail how the work of phototyping Swedenborg's Manuscripts has been developed since 1910 and how other connected work on the scientific works and miscellaneous documents has progressed. Before the great war broke out in 1914 the speed of the phototyping had been increased from time to time with the intention of finishing by 1916 the work scheduled in 1910, and a later attempt in 1915 to finish the printing still earlier was made impossible of execution because of a lack of funds. For details concerning the progress of the printing month by month see the "Monthly Reports, 1911—1915" (*Appendix*, No. 6), and for a synopsis of the annual expenses and receipts for printing see the "Phototyping Account, 1910—1916" supplied by the printer (*Appendix*, No. 7). A study of these documents shows exactly how the speed of the phototyping was increased periodically according to urgent instructions from London, but that the payments did not increase in proportion, resulting in so large a debt last spring

that special appeals for funds were sent out by the editor and printer. Moreover, the editor's grants also ceased on September 30th, and the printer and editor were obliged to go on without adequate support. After numerous letters, reports and appeals, and after a visit by the editor to London in September, help is now arriving from America *via* London and the phototyped series will be finished during the summer. After that the editor will leave for America on an extended visit, having been invited to visit Bryn Athyn in order that new arrangements may be made for the continuation of the work i Sweden

In the section below entitled "Swedenborg at Stockholm and Upsala" the reader will find a popular review of the various lines of investigation now in hand with suggestions for their continuation and future development. At this place the general business policy and editorial plans for the work will be outlined.

Even before 1910, when the conduct of the phototyping was placed by the united societies in the hands of the Swedenborg Society of London, the editor was supported ostensibly for supervision of the phototyping, but it was always understood that the editing of the scientific works and of the documentary results was also involved. The latter lines of work have been supported from time to time by special subscriptions in Sweden, America and England.

The honoured President of the International Swedenborg Congress, Mr. E. J. Broadfield, during his last days emphasized the importance of not forgetting the work in Sweden, and the editor trusts that the Conference and Swedenborg Society will sooner or later again do their share in continuing the phototyping of Swedenborg's MSS. so that this duty will be done. There are plans in America to continue the work, and as there is little hope of the cooperation of the English bodies at the present time the editor has begun correspondence with the American societies which are coming to the rescue. At the same time I trust that the work on the scientific series, including "The Brain", and also on "Documents concerning Swedenborg", in which the Swedenborg Society is so deeply interested, will be supported according to plans long matured and in progress for years.

Appeals for Funds.

Under the supposition that all special work not included in the phototyping will be supported as hitherto by the subscriptions of interested bodies and individuals, the question of funds for the phototyping and for the editorial work remains to be solved not only for the current year in order to finish the present series, involving about

40,000 kronor, but also for the future after the editor's visit to America next autumn and winter. If the printer is to be kept busy new orders and funds ought to be provided without delay, otherwise the trained employees must be dismissed and there will be a great loss of time. In previous reports the editor has preposed that the remaining unreproduced manuscripts of Swedenborg be phototyped during the next few years in a series of volumes supplementing the present series. The best way to do this is to let the work go on without a break. The highly developed methods now employed are described below, showing how remarkably accurate and trustworthy the phototyped reproductions really are.

Editorial Methods and Plans.

Formerly all correspondence, including payment of bills, passed directly through the editor's hands, but of late years he has only initialed bills from the printer, paper firm and binder, etc., also sending monthly and annual reports, the payments being made directly from London. and the correspondence with the American societies being conducted by the officials of the Swedenborg Society. But recently the editor has again communicated directly with the various societies, and with the consent of the London officials has also arranged with the printer to postpone the final bill for this year until June 30th. It is hoped that since no adequate arrangements, were made last year that this early Annual Report, supplementing last year's appeals, will result in the raising of sufficient funds to meet all current expenses for printing, paper, binding, etc., especially as an incorrect impression has until last month prevailed in America that sufficient funds had been sent on. In future I trust that prompt quarterly payments will be made of all accounts and that the editor will also be supplied with sufficient money to push the editing of the scientific works and documentary collections. The publication of the projected volumes will bring back much money already invested in the investigations and copies since the year 1902. Full information concerning the volumes now ready for press will be found in the concluding section of this report, and some account will now be given of the methods and plans for the phototyping.

In continuing the editing of the *Memorabilia* or *Spiritual Diary* in 1902, in press before the editor's arrival in Sweden, certain improvements were gradually introduced and a new printer was employed, resulting in a far better product. The variations in the color of inks employed were reduced, the tone of the pages was brightened, the

retouching was reduced to a more scientific basis. Every effort was made to have all stages of the phototyping carried on in immediate touch with the manuscript evidence. Blots or discolorations which if printed without retouching of negative were illegible were so retouched on the negative or treated on the gelatine plate that the writing underneath appeared. Gradually the speed of the work was greatly increased, and in later years improved glass cases permitted work on numerous pages every day and obviated the necessity of opening the cases continually at the printer's office, and the retouching was also carried on largely in the library of the Royal Swedish Academy of Sciences. In this way the present high degree of accuracy has been attained.

Bearing in mind the fact that the great series of photolithographed and phototyped reproductions of Swedenborg's MSS. while covering the field very satisfactorily so far as they go still leave out a considerable body of theological, scientific, and miscellaneous MSS. by Swedenborg, the editor has in recent annual and other reports suggested that the remaining unreproduced matter be also phototyped in a collection of five or six volumes supplementing the present series. This proposal is being considered in America, and it is to be hoped that even if all of the societies in England and America cannot now continue their support because of the large contributions necessary for the phototyping scheduled in 1910, the printing and editorial work may nevertheless be continued along the original lines without a break, the societies out of play now later taking their proportion of the editions. Up to this point the general business policy and editorial plans have been outlined, and a particular description of the work in Sweden will be furnished below.

Estimates, Results and Plans.

The previous business part of Annual Report, sent out on March 16th, is here extended, on March 24th, by additional information *re* phototyping in reply to a number of questions from officials and students in England and America.

The expenses for the printing have been accounted for by the printer (*Appendix*, No. 7) and further expenses are for paper, kr. 4,437.12, of which kr. 340.72 are unpaid, and for binding kr. 12,540, estimated for the twelve volumes in an edition of 110 copies, the binding costing kr. 9.50 per volume. Editorial expenses, and incidental expenses for insurance etc., are not included here. All business has been transacted in the name of the Swedenborg Society, London, and the works have also been insured in the name of the Society for their full value.

The phototyping method was first employed to reproduce Swedenborg's MSS. in the case of the *Prophets and Psalms*, published in 1896 by the Academy of the New Church. Later, up to the year 1910, six volumes of phototypes, reproducing the *Spiritual Diary* and *Index Biblicus*, were seen through the press. In the accompanying "List of Works phototyped since 1910" the twelve volumes printed since that year are referred to by works, codices, and pages. The order of these volumes, and of the six volumes of the *Diary* and *Index Biblicus* as arranged in a single series of tomes, with the general title *Emanuelis Swedenborgii Autographa*, is also indicated in the "List" (*Appendix*, No. 8).

The titles of the volumes, recently printed in Latin and English, will according to the above plan, be accompanied by a general title for the series of tomes, and the student will also find particular information in the Prefaces and Contents which are being finally revised for press in a single harmonious form. At the close of the series an *Appendix* of historical and critical notes would record certain important memoranda, and a *Circular* planned in London for national and university libraries would explain the unique nature and scope of the whole series of volumes.

The information and figures supplied above indicate the scope and cost of the phototyped series about to be issued. It is highly desirable that the volumes should be made accessible in the same libraries in which the Tafel photolithographs have been or will be placed. The edition in both cases is 110 copies. With the 28 volumes of photolithographs and phototypes before him the student may examine Swedenborg's MSS. with ease. The specialist and editor will find them invaluable, and the student using them will only regret that the remaining MSS. are not phototyped, for even with all the volumes now reproduced there remain numerous additions which should be included in another five or six volumes folio. The materials here referred to will now be described briefly.

Dr. R. L. Tafel edited ten volumes of photolithographs, also a retouched edition of the MS. *De Charitate*, and Swedenborg's annotated Bible, the books not of the Word according to the New Church canon being omitted, and by a mistake of the printer the two books of Samuel. I suggested some years ago that the unreproduced annotations in Swedenborg's Latin and Hebrew Bibles be appended to *Index Biblicus*, but as this was not acceptable I now recommend the phototyping of the annotated pages, or better still of the Bibles as they stand, in their entirety. Nothing would better show the advantages of the phototyping method, as compared with the photolithograph-

ing, than the phototyping of the Bibles and of *De Charitate.* And in addition the remaining collections of scientific, theological and miscellaneous content would make accessible, if published in six volumes as a continuation of the phototyped series, all of the minor MSS. and documents, of untold value and interest in connection with the series of photolithographs and phototypes in 28 volumes now printed. The MS. of the *Prophets and Psalms* published in 1896 in folio and quarto sizes was incomplete in that the marginal numbers on certain pages were cut away in the photographs. After the present editor's arrival in Sweden the pages in question, which had previously been phototyped anew, were dispatched to the publisher, the Academy of the New Church. The editor also convinced the official in charge of the phototyping, Mr. C. Hj. Asplundh, that certain blots in the phototyped *Diary* could be printed in such a way by the use of retouching and modification of moisture in printing that the writing underneath was made legible, instead of being entirely illegible. This and other improvements were introduced in the printing as before described. I recommend that the portions of Tafel's photolithographs and of the *Prophets and Psalms* and *Diary* which were not done in such a way as to make the writing quite legible, because of imperfections of the method, be reissued in their proper places in the additional phototyped volumes contemplated.

In reports and appeals sent out last year, the proposed contents of *Miscellanea Theologica* as modified from time to time after consultation with Professor I. Tansley and Rev. A. Wilde were referred to, and I am now able to add that Professor Alfred Acton has prepared a Report of unreproduced MSS. on the basis of Hyde's *Bibliography* and the editor's *Chronological List.* A number of MSS. in the Library of the Royal Swedish Academy of Sciences, and in the State Archives, Stockholm, formerly photographed for *Miscellanea Theologica*, will be available for the intended volumes, the phototyping of which I heartily recommend to the united societies.

The Significance of the Phototyped Series.

The work in Sweden, taken in its widest sense, was established by a number of investigators and editors, who have visited Stockholm and other central points in order to collect information, later publishing their results abroad, except in the case of the photolithograped manuscripts edited by Dr. R. L. Tafel at Stockholm, 1869—70, in ten volumes folio. As described in the business portion of Annual Report, and in previous reports, the ten volumes of photolithographs

will now be supplemented by eighteen volumes of phototypes. Tafel's collection included selected scientific, philosophical and theological manuscripts. The new series is confined to theological MSS., but as they are of great importance not only as complementing the photolithographs, but also as illustrating Swedenborg's unique authorship, a brief description may be acceptable.

Having finished his scientific and philosophical works in the year 1745, Swedenborg recorded in three large MSS. his biblical studies and spiritual experience. These MSS., which may be considered as preparatory to the *Arcana Coelestia*, have been phototyped in nine folio volumes, each of the three MS. works filling three volumes. Their names are *Memorabilia or Spiritual Diary*, *Bible Index*, and *Explanations of the Word or Adversaria.* The first work is not only like the other two printed in Latin under the editorship of Dr. J. F. I. Tafel, but has also appeared in an English translation as *The Spiritual Diary*, being therefore widely known and easily accessible even to the lay reader. But the *Bible Index*, partly printed in Latin, is otherwise inaccessible, and of the *Adversaria* only portions have appeared in German and English as translated by the Rev. Louis H. Tafel and Professor Alfred Acton. All of these three works contain spiritual experience and biblical studies, the results being often used in the *Arcana Coelestia*, London, 1749—1756, but whereas the *Diary* is almost entirely a "spiritual diary", the *Index* and *Adversaria* constitute a concordance and commentary of the Bible. Swedenborg's methods of study are here laid open to the student's eye, and in Swedenborg's annotated Bible his methods of work in the same connection are still more patent. By comparisons of names, passages and texts in the Bible he evolves the spiritual senses of books, chapters, verses, words and letters. The *Bible Index* is a concordance with this end in view, the *Explanations of the Word or Adversaria* are systematic presentations of the results of these biblical studies. The reader of the *Arcana* will therefore find these works of great interest and value for comparative study. For further information see Tafel's *Documents*, Hyde's *Bibliography*, and Professor Acton's editorial remarks in his edition of *The History of Creation*, being the first part of the *Adversaria.*

The photytyped MSS. of *Arcana Coelestia* and *Apocalypsis Explicata* are the first drafts of those works. The editor has published an article in *New Church Life* for 1904 on the importance of these drafts for a corrected edition of the text, and after visiting Sweden in 1910 the Rev. E. J. E. Schreck published his results of study of these MSS. in the *New-Church Review.* Briefly stated, the MS. of

the *Arcana* corrects the printed text and shows how it was produced and in the case of the *Apocalypse Explained* the MS. draft now phototyped corrects and explains the second MS. of the work intended for the printer, but not published by Swedenborg, although printed later in several editions and photolithographed by Tafel in the 1869—70 series.

The phototyped volume of *Miscellanea Theologica* contains several smaller items and one large MS., Codex 7, containing Swedenborg's Index to the works *Apocalypse Revealed* and *Conjugial Love*. The smaller MSS., three of which were phototyped in 1903 during the editor's first visit, are the following: 1) A little unpublished work *On Marriage*, of interest in connection with the larger published *Conjugial Love*, 2) *Notes on Calvin*, and 3) *Notes for the True Christian Religion*, being drafts for published works written towards the close of Swedenborg's life, 4) *On Faith and Good Works*, an early theological paper dating from Swedenborg's philosophical period, 5) *Philosophical and Theological Notes*, pages from Codices 88 and 36 not easily read in the photolithograph, 6) *Hieroglyphic Key*, also a small MS. dating from Swedenborg's philosophical period.

The other unreproduced theological works, fragments and letters, etc., previously intended for this volume were last year, during the editor's visit in London, excluded in order to reduce the expense of the present series which has been much greater than supposed. The editor has recommended in appeals and reports that all the remaining MSS. be phototyped and that a volume of phototyped *Swedenborgiana*, published in part in 1910, be completed as a scientific volume, the three MSS. there phototyped being of scientific content, and permission to acquire the edition of 110 copies having been given the editor by the New Church Publishing Society of Stockholm. The MSS. of Swedenborg not yet reproduced are nearly all preserved in Swedish libraries and archives, foreign materials having been photographed during the editor's investigations since 1902, and all known MSS. included in the revised and extended *Chronological List* typewritten and distributed to London, Bryn Athyn and Cambridge in 1913

Appendix, No. 8.

List of Works phototyped since 1910.

Explicationes in Verbum seu Adversaria.

Vol.	I.	Codex	59	reproduced in 727	pages.
»	II.	»	60	» » 601	»
»	III.	»	61, 62	» » 799	»

Arcana Coelestia.

Vol.	I.	Codices 8, 10, 80, 9	reproduced in	545	pages.
»	II.	» 15—19	» »	1148	»
»	III.	» 20—23	» »	1015	»
»	IV.	» 24—26	» »	710	»
»	V.	» 112—114	» »	747	»

Apocalypsis Explicata.

Vol.	I.	Codices 27—29	reproduced in	480	pages.
»	II.	» 30—32	» »	450	»
»	III.	» 33—35	» »	503	»

Miscellanea Theologica.

De Conjugio, *Annotata de Calvino*, and *Annotationes in Veram Christianam Religionem*, phototyped in 1903, reproduced in	54	pages.
De Fide et bonis Operibus	55—68	»
Philosophica et Theologica from Codices 88, 36	69—84	»
Clavis Hieroglyphica, Codex 79	85—137	»
Index Apocalypseos Revelatae et Operis de Amore Conjugiali, Codex 7	139—449	»

Emanuelis Swedenborgii Autographa.

Tom. I.—III.	*Memorabilia seu Diarium Spirituale.*
» IV.—VI.	*Index Biblicus.*
» VII.—IX.	*Explicationes in Verbum seu Adversaria.*
» X.—XIV.	*Arcana Coelestia.*
» XV.—XVII.	*Apocalypsis Explicata.*
» XVIII.	*Miscellanea Theologica.*

Appendix, No. 7.

Phototyping Account, 1910—1916.

The Swedenborg Society
to
Ljustryckeri A.B. Lagrelius & Westphal.

1910	Sept.	30	Enligt räkning	357.—	
	Dec.	31	» »	2,600.—	2,957.—
1911	Juni	30	» »	5,044.70	
	Sept.	28	» »	5,008.50	
	Dec.	30	» »	3,761.87	13,775.07

1912	Mars	30	Enligt räkning	3,800.—		
	»	»	»	1.726.25		
	Juli	1	»	1,208.50		
	Okt.	1	»	1,300.—		
	Nov.	26	»	3,701.25	11,736.—	
1913	April	3	»	3,750.—		
	Sept.	30	»	1,500.—		
	Juli	2	»	3,120.45		
	Dec.	31	»	6,000.—	14,370.45	
1914	Mars	30	»	5,358.75		
	Juli	1	»	5,500.—		
	Okt.	1	»	5,500.—		
	Dec.	31	»	5,819.10	22,177.85	
1915	Mars	31	»	6,414.60		
	Juni	30	»	6,591.—		
	Sept.	30	»	6,550.65		
	Dec.	31	»	6,552.—	26,108.25	
1916	Juni	30	Sluträkning		13,029.90	104,154.52
1910	Okt.	20	Kontant		357.—	
1911	»	26	»	4,550.—		
	Dec.	2	»	2,724.—		
	»	29	»	3,634.—	10,908.—	
1912	April	24	»	3,636.—		
	Sept.		»	3,633.—		
	Dec.	9	»	3,634.—	10,903.—	
1913	Mars	5	»	1,726.25		
	»	17	»	2,734.50		
	Okt.	16	»	5,466.—	9,926.75	
1914	Juni	8	»	5,463.—		
	April	25	»	3,636.—		
	Mars	16	»	1,822.—		
	Aug.	17	»	3,656.—	14,577.—	

1915 Jan.	22	Kontant	. . . . .	3,830.—	
April	24	»	. . . . .	5,535.—	
Maj	18	»	. . . . .	5,496.—	
Juli		»	. . . . .	5,520.—	
Aug.		»	. . . . .	5.460.—	25.841.—
1916 Mars	3	»	. . . . .	3,378.—	75,890.75
			Saldo oss tillgodo kr.		28,263.77

Tillkommer ev. c:a 30.— kr. för porto till den 1/7 1916.

Proposed Continuation of the Phototyping of Swedenborg's MSS. and Work in Sweden.

The concluding portion of the editor's Annual Report for 1915—16 is now submitted to the English and American bodies interested in the phototyping and connected work. The status of the phototyping last spring was described in the reports then distibuted, and a special section entitled "Swedenborg at Stockholm and Upsala" was promised. This contribution, of historical and literary content, will be sent out later, the present report bring confined to business matters and prepared just before the editor's departure from Europe on a visit to America in order to make new arrangements for the continuation of the phototyping and other work in Sweden.

The phototyping of the 1910 series was finished by the printer last June as intended and promised. The present condition of the account, as prepared by the printer and revised by the editor, may be seen at the close of this report. This does not include the *Index Biblicus* and the expenses for paper, binding, insurance, printing of editorial matter, editor's grants, etc. The bills have been initialed and forwarded to London up to October, at which time the *Index Biblicus* was bound and all necessary information supplied to the binder and to the officials of the London Swedenborg Society who have the binding, distribution and payment of bills in their sole charge as the editor must leave Stockholm on a visit to America. This has been advised by the officials of the Academy of the New Church and also by those of the Swedenborg Society now that the editorial work on the phototyped volumes scheduled in 1910 is finished and the binding in progress.

After the editor's visit to London in September, 1915, it was decided during the following winter and spring that an honorarium of £ 270 be paid to the undersigned in order to cover the period from Oct. 1st, 1915, to June 30th, 1916. This was very satisfactory in view of the previous uncertainty, but when it became clear later on that is was intended to delay payment, until the delivery of the volumes in London, the editor resigned after seeing the printing to a conclusion towards the close of June. In August the Rev. Arthur Wilde, Secretary of the Swedenborg Society, visited Sweden. During his visit the honorarium was paid and the editorial work on the prefaces and contents for the whole phototyped series was brought to a conclusion. Immediately after Mr. Wilde's return to London the prefaces and contents were printed, the titles having been seen through the press some months before. Subsequently the editor withdrew his resignation, but as no further phototyping can be authorized in London the editor cannot be reengaged and paid after June 30th, 1916. So far as the phototyping is concerned, the London interests desire to withdraw from further expences in that connection, but as the American bodies have taken a different position there is hope that the whole of Swedenborg's MSS. will be phototyped after the 1910 series shall have been paid for and delivered. Last summer the editor received from the Academy of the New Church a copy of the Rev. Alfred Acton's report on Swedenborg's MSS. recommending the phototyping of every page still unreproduced. This report is detailed and comprehensive, proposing the phototyping of miscellaneous MSS. in nine volumes. Possibly the number of volumes might be reduced to six in order to concentrate the contents and reduce expenses.

Including the *Spiritual Diary* and *Index Biblicus* as the early volumes of the series the phototyped MSS. now to be bound and distributed comprise eighteen volumes folio edited in uniform style with a single series of general titles and lettering for the backs of the volumes. The editor has gradually worked out a complete scheme comprising Latin titles and lettering for the series *Emanuelis Swedenborgii Autographa*, Vols. I.—XVIII., as previously reported. In the same connection the special Latin and English titles for the works and volumes were carefully considered again and again as they involved the important question of determining the titles of several works. In this the editor was able to arrive at results which he hopes will be found satisfactory by scholars and editors. As for the prefaces and contents they were prepared in London by a committee of the Swedenborg Society and by the editor, and finally revised by Mr. Wilde and the editor at Stockholm last August and September in connec-

tion with a complete examination of a sample copy of the phototyped pages to be followed by the binder. The editor's plans and preparations comprised numerous bibliographical references and critical notes concerning the MSS., order of pages, etc., but it was decided in London to exclude such matter from the prefaces and contents, postponing the question and suggesting the publication at the close of the series of a separate volume to include the editor's results. This suggestion I have accepted and intend to prepare the complete bibliographical and critical notes for the close of the series in which I propose that the remaining phototyped volumes which may be authorized in America be included after Vol. XVIII.

* * *

The work in Sweden has not been confined to phototyping, although that undertaking has required most money and labor. The American bodies have also supported by contributions and subscriptions the editing of the scientific works, *Opera Quaedam de Rebus Naturalibus*, and the *Chronological List.* Progress in this special scientific and bibliographical work will be reported in the paper on "Swedenborg at Stockholm and Upsala", the financial features bring referred to here, especially so far as the London interests are concerned.

The American subscriptions to the Stockholm edition of the scientific works were collected by the Swedenborg Scientific Association, and as the Association and its organ *The New Philosophy* have been intimately associated with the editor and the scientific series published in Sweden I have no doubt that subscriptions for the future volumes will be forthcoming, especially since the London Swedenborg Society some years ago voted to subscribe for 125 copies of the series. As editor I apply for written promises to pay subscriptions. There is a fund of over 4,000 kronor in the Royal Swedish Academy of Sciences for this series, and in May, 1915, the Academy adopted a recommendation of the Swedenborg Committee to grant the editor kr. 20 per sheet for future volumes.

The Swedenborg Society has also offered last month to arrange with Professor O. M. Ramström of Upsala for the editing of *The Brain* at so much per page, the plan having been after I took the MS. collections to Upsala in 1913 that Professor Ramström should do the editorial work and I the text, etc., as copies of the MSS. involved are in the Academy of Sciences for use in the Stockholm edition. When in Sweden the Rev. Arthur Wilde suggested to Professor Ramström and myself that the Latin MSS. be typewritten in

London after having been revised by me at the Academy of Sciences. This i find very acceptable as it not only facilitates Professor Ramström's editorial work but also make the printing of the texts in the Stockholm edition easier.

It was also proposed by Mr. Wilde that the remainder of the *Chronological List* should be forwarded by the editor to London to be typewritten, time only being paid for and the remaining money to be paid over to the editor for his labor. I have just received a letter and statement from Mr. E. C. Bostock explaining that of the remaining subscription of £ 100 for 1915—16 from Bryn Athyn only £ 24 remain to be expended, £ 76 having been paid to Miss Odhner and Mr. Rosenqvist in 1915. The accounts for the years 1913—15 were sent out last year as audited, and the remaining expenses will be managed in such a way that the editing and typewriting of the *List* will be covered by the third year's subscriptions from London, Boston and Bryn Athyn, after which the remaining typewritten results with final account will be sent to the contributing societies. Acting under instructions from London in 1913 the *List* will be published in the *New-Church Magazine*, the editor of that periodical, the Rev. J. R. Rendell, have made arrangements to that effect.

* * *

It will be seen from the above report that the work in Sweden while suffering from the uncertain conditions produced by the war is still in progress and that steps are being taken to continue and bring to a conclusion everything hitherto undertaken.

Thanking the contributing societies for their support during the difficult period 1914—16, and trusting that all plans will be ultimated after further consultation, I remain,

Yours faithfully,

ALFRED H. STROH.

Christiania, Norway, Dec. 12th, 1916.

Phototyping Account, 1910—1916.

The Swedenborg Society

to

Ljustryckeri A.-B. Lagrelius & Westphal.

Debet.

1910	Dec.	31	Enligt räkning	2,600.—	2,600.—
1911	Juni	30	» »	5,004.70	
	Sept.	28	» »	5,008.50	
	Dec.	30	» »	3,761.87	13,775.07
1912	Mars	»	» »	3,800.—	
	Juli	1	» »	1,208.50	
	Okt.	»	» »	1,300.—	
	Nov.	26	» »	3,701.25	10,009.75
1913	April	3	» »	3,750.—	
	Sept.	30	» »	1,500.—	
	Juli	2	» »	3,120.45	
	Dec.	31	» »	6,000.—	14,370.45
1914	Mars	30	» »	5,358.75	
	Juli	1	» »	5,500.—	
	Okt.	»	» »	5,500.—	
	Dec.	31	» »	5,819.10	22,177.85
1915	Mars	»	» »	6,414.60	
	Juni	30	» »	6,591.—	
	Sept.	»	« »	6,550.65	
	Dec.	31	» »	6,552.—	26,108.25
1916	Juni	30	» »	8,010.60	
	»	»	» »	5,019.30	13,029.90
	Sept.	23	Porto		34.45
				Kronor	102,105.72

Kredit.

1911	Okt.	26	Kontant	4,550.—	
	Dec.	2	»	2,724.—	
	»	29	»	3,634.—	10,908.—
1912	April	24	»	3,636.—	
	Sept.	»	»	3,633.—	
	Dec.	9	»	3,634.—	10,903.—
1913	Mars	17	»	2,734.—	
	Okt.	16	»	5,466.—	8,200.50
1914	Juni	8	»	5,463.—	
	April	25	»	3,636.—	
	Mars	16	»	1,822.—	
	Aug.	17	»	3,656.—	14,577.—
1915	Jan.	22	»	3,830.—	
	April	24	»	5,535.—	
	Maj	18	»	5,496.—	
	Juli	»	»	5,520.—	
	Aug.	»	»	5,460.—	25,841.—
1916	Mars	3	»	3,378.—	
	»	20	»	3,296.—	
	April	12	»	3,220.—	
	Maj	1	»	3,140.—	
	»	16	»	3,070.—	
	Juni	8	»	3,160.—	19,264.—
	Okt.	23	Saldo oss tillgodo		12,412.22
				Kronor	102,105.72

Upsala, Sweden, Vasagatan 1 C.
Dec. 13th, 1915.

To the American Societies engaged in the phototyping of Swedenborg's Manuscripts and in the Work in Sweden:

In the year 1910, July 11th, after the International Swedenborg Congress, there was held a meeting in London to promote the publishing of Swedenborg's works. It was voted to phototype a num-

ber of Swedenborg's MSS., and the editorial work was placed in the hands of the writer of this communication. The concluding volumes are in press, but the printer and editor are suffering from delays in support beginning with the present year.

Having returned to Stockholm last January I found a large phototyping debt, which frustrated my plans to finish the work at an early date. Even after several payments the debt has this month again mounted to its previous size, over 18,000 kr., as shown by the printer's statement at the close of a letter to the secretary and treasurer of the London Society sent out last week.

On behalf of the printer and myself, I request the American societies to continue their support of the work in Sweden, as follows:

1. Let arrangements be made for quarterly payments for the work scheduled in 1910.

2. Let the editor's salary be paid quarterly on time as promised in 1910 for the work then undertaken.

3. Let new arrangements be made before April to phototype the remaining MSS. of Swedenborg, and to continue the editor's salary.

4. Let the subscriptions for the scientific works and for the Chronological List work be continued in such a way that the publication of those important results will be ensured.

Without referring to the details of the work in Sweden, which may be consulted in the monthly and annual reports, and in the recent *Appeal*, I desire to emphasize the following points. — During the past year I have repeatedly advised the London Society of the phototyping debt, of the necessity of making arrangements for the printing until the close of this financial year, and of the desirability of continuing the work next year. I am unaware of the present arrangements with the American societies, but the payments for phototyping have been slow and there has been a debt this year so large that only my repeated personal efforts and promises have kept the work going. Not to mention repeated delays in the payment of my salary, I have been informed that no arrangements have been made to continue it after September 30th. When in London in September I found that the Society had a debt of 1,000 Pounds in a bank, that payments would be slow, that nothing could be promised for next year, neither new printing nor salary. I therefore agreed to go on for the present without salary, hoping to solve the difficulty in the course of the quarter. Whether my salary will be sent from London by Christmas or by Dec. 31st I do not know. The recent letters and a telegram last week do not reassure me.

Will the American societies kindly consider that I was appointed

as editor in 1910 with a salary in continuation of previous appointments since 1902, that the understanding was to continue with the remaining work and finish it after the phototyping, that I always acted in that spirit, and that after my breakdown I returned last January in high spirits and engaged to be married, settled at Upsala for a year or two on the advice of my physicians, rented a flat and married in the spring after having become a Swedish citizen.

Having made all arrangements and with bright hopes for the future I gradually inspected and reorganized the work, finding the large debt for the phototyping and other difficulties which had accumulated during my absence. The Swedenborg Society began to reduce expenses, advising against my employing a secretary, intimating that my salary would soon cease, and finally putting a time limit to the work and to my salary in spite of my requests and explanations as supported by the printer. I finally travalled to London to ascertain the facts and to make new arrangements, hitherto without success, and now appeal to the American societies for help.

Respectfully submitted,

ALFRED H. STROH.

P. S. This communication is being sent to the following officials in England and America: Rev. A. Wilde and Mr. F. A. Gardiner, London, Rev. Joseph Deans, London, for the Swedenborg Society and Conference; Mr. H. W. Guernsey, New York, for the American Swedenborg Society; Messrs. J. R. Carter and H. P. Chandler, Boston, for the Convention and Rotch Trustees, and Mr. E. C. Bostock, Bryn Athyn, for the Academy.

A. H. S.

A Communication to the Council of the Swedenborg Society re Unfinished Business in Sweden, May, 1916.

Gentlemen:

After urgent appeals during the past year arrangements are being perfected in England and America to pay the phototyping debt and the editor's salary to June 30th as requested. This consummation is very satisfactory after the exasperating uncertainties and delays which

have characterized the work during recent times. But the finishing of the phototyping scheduled in 1910 leaves the great and important question of the other unfinished business untouched. The continuation of the phototyping must be left to the American bodies as the work cannot be authorized in England. I shall therefore finish the revision and binding of the 1910 series during the next few months, trusting that the American bodies will provide funds for the printer and editor after June 30th when the previous phototyping will be finished, only odds and ends of work remaining. The details of the work I am discussing in letters to your secretary and treasurer as before.

What should be done with the other unfinished business? Permit me to state the facts. From 1907 to 1911 I issued for the Swedenborg Committee of the Royal Swedish Academy of Sciences three volumes of Swedenborg's scientific texts in Swedish and Latin. This work was paid for in Sweden and there is a fund in the Academy produced by subscriptions. The Swedenborg Society was so interested that 125 sets of the whole series were subscribed for, and together with American and other subscriptions it was possible to proceed with two additional volumes still in press. I have from time to time continued the work, and this past year I have collected at Upsala useful information for the prefaces and notes as the volumes comprise Swedenborg's earliest works before the *Principia*, thus explaining the development of Swedenborg's philosophy, a question which has appealed strongly to me and others in Sweden. A year ago the Swedenborg Committee reported finally to the Academy and I was appointed editor for the series at the rate of kr. 20 per sheet, funds permitting.

Whether the American bodies are able or not to pay for more phototyping and to continue my salary after June 30th, when the present arrangement expires, I feel that the Swedenborg Society's clear responsibility for the support of the scientific and documentary series is an important and unavoidable duty which should not be shelved permanently, for the resolutions and understandings between us are plain. We have arranged in Sweden for combined work with your Society, involving the publication of the following series:

1) The edition of the Academy of Sciences, the Society taking 125 copies.

2) The Society's English translation of the Academy's edition, involving the use of the editorial matter and numerous translations by myself and by the Rev. Messrs. Rendell and Tansley, finished or in progress.

3) The editing of Vols. III. and IV. of *The Brain*, by Professor Dr. O. M. Ramström and myself in connection with the Academy's edition of the texts, the Tafel and Hyde collections being deposited in 1913 in the Upsala University Library for this purpose by myself acting for the Council.

4) The editing and publication in the *New-Church Magazine* of my *Chronological List.* This was voted by the Council after my return to Sweden in 1913, and the London documents arranged by Tafel and Hyde were deposited in the Academy's Library and recently in the Upsala Library. The Rev. A. Wilde and Miss Odhner have also during my illness without consulting me begun the publication of new documents collected and translated for *List* funds. I have not waived my editorial rights, however, in this or in the scientific work.

Where do we stand today? I have gone on with the phototyping, letting it take first place, and also doing considerable scientific and documentary work since 1910. I have recommended the continuation of the three lines of work and am also arranging for the publication of a large work on Swedenborg and the recent celebrations in London and Upsala. After many years of successfel labour and after the expenditure of large sums of money I have got everything ready for publication. I am most unwilling to avoid finishing the work undertaken for the Royal Swedish Academy of Sciences, for the Swedenborg Society, and for the associated bodies. I earnestly request relief and continued support, especially as it was always well understood that after the phototyping, which was to take first place, the scientific and documentary work should be finished.

Except for the nerve-racking uncertainties and delays of the past year and the great lack of funds there is no reason why the work as organized and begun should not be continued, for I have now recuperated according to the advice of my doctors in Upsala and am able to return to Stockholm and go ahead next quarter if the means are provided, or to proceed to America in September so as to reorganize the work in Sweden, according to an invitation from Bryn Athyn. I request an early consideration of this communication by the Council, and also by the associated societies to which it is sent, in order that the work may go on and be properly supported, everything proceeding according to the plans as developed during recent years. I especially request that as a journey to America may be dangerous or impossible next autumn, some solution may be found for the continuation of my salary from June 30th, 1916, to June 30th, 1917, so that the unprepared conditions of the p m yeartayas be avoided.

In conclusion, I desire to thank the Swedenborg Society most heartily for the support received by me during the past years, and all of the united societes for not breaking off their relations with me during the period of my illness. The uses comprised by the work in Sweden which I have had the honour to organize and conduct since 1902 are I trust so firmly established that no temporal disturbance will cause their indefinite postponment or cessation.

With expressions of gratitude and respect,

Yours faithfully,

ALFRED H. STROH.

Upsala, Sweden, May 8th, 1916.

Proposals for continuation of Work in Sweden.

The London interests, representing the Swedenborg Society and Conference, have definitely withdrawn from additional phototyping of Swedenborg's Manuscripts, but the 1910 series, ready for binding in September, may be distributed without delay if the binding is paid for work by work. A number of theological manuscripts, contained in the volume of *Miscellanea Theologica* as originally planned, have been left undone in order to save expense, but if the money can be raised in America there is still time to include the 410 pages of theological matter referred to below under »Phototyping».

The London interests, although they desire to withdraw from the phototyping, do not give up their connection with the publication of the scientific works and *Chronological List.* Therefore, in view of future annual expenses in Sweden for publications and editorial grants, it may be found advisable to provide for the support of the scientific and documentary work in so far as it is not paid for in Sweden and England, while the phototyping can proceed more slowly in the meantime. If sufficient money can be found in America to push the phototyping to a conclusion in a few years at the former high speed, that work will be finished in 1920 long before the rest of the work in Sweden. The editor would then be without support, for the grants since 1902 have been contributed for the phototyping, all other funds from whatsoever sources having been used for travels, investigations and special publications.

If the money which may be supplied from all sources be so such less *per annum* than before when six bodies were engaged in the

phototyping, the publication of the other matter may proceed more rapidly for a time, releasing to some extent, in the form of printed results, the capital placed in copies, translations, and editorial work since 1902, especially as all collections made before and after that year are now gathered together in Sweden.

The present status of the work in Sweden and the scope of the proposed continuation will be seen from the following memoranda as arranged under three headings representing everything hitherto undertaken by combined efforts in America, Sweden, and England.

Phototyping.

The previous phototyped series has been arranged in eighteen volumes as follows: 3 *Spiritual Diary*, 3 *Index Biblicus*, 3 *Adversaria*, 5 *Arcana Coelestia*, 3 *Apocalypse Explained*, 1 *Miscellanea Theologica*. It is suggested that after Volume XVIII. the remaining manuscripts of Swedenborg be issued according to the Report on Swedenborg's manuscripts prepared in 1916 by Professor Alfred Acton with such modifications as may be found advisable.

Reckoning at kr. 12,50 per page the 7,000 phototyped pages proposed by Mr. Acton's Report would cost kr. 87,500.—, that is, about 15 % less than the 1910 series which cost kr. 102,105.72 according to the final account of Lagrelius and Westphal appended to the last Annual Report. Therefore, when the closing account for phototyping expenses other than the printing of the 1910 series has been received from London it will furnish a basis for an approximate calculation of the total expenses for the next series.

Under the supposition that the American bodies cannot undertake the remaining phototyping until the 1910 series has been disposed of, it is proposed that the *theological* MSS. referred to in Mr. Acton's Report be reproduced now so that the volume of *Miscellanea Theologica* will be complete. The MSS. in question, comprising small works, Swedenborg's theological letters, and fragments, fill 410 phototyped pages, which would cost at kr. 12.50 per page, kr. 5,125.—. By issuing this collection together with the *Miscellanea Theologica* about 1,000 kr. would be saved for parchment and binding. As this work proceeds the question of reproducing the remaining series of philosophical, scientific and miscellaneous content, could be fully considered.

The calculation of pages as given in this section excludes 155 pages of Swedenborg's Bible, for in case it is phototyped the pages

omitted in the photolithograph need not be reproduced in *Miscellanea Theologica*.

Scientific Works.

The Swedenborg Fund of the Royal Swedish Academy of Sciences, produced by subscriptions for the Stockholm series, exceeds kr. 4,000. The cost of the three volumes issued, including part of Volume IV. and numerous copies for future volumes, was about kr. 12,000.—. Volume IV. is nearly ready for publication and includes Swedenborg's *Daedalus* photolithographed, together with Swedenborg's early works up to the *Principia*.

With 125 subscriptions for the series promised by the London Swedenborg Society, and with possible American and other subscriptions, the price per volume may be fixed at $ 3.—, so that the capital will be returned by the subscriptions and provide for the publication of the series volume by volume. But before exhausting the present fund it is desired that the subscriptions be guaranteed in writing.

The Royal Swedish Academy of Sciences voted on May 26th, 1915, to pay the editor kr. 20 per sheet of 16 pages for future volumes, funds permitting.

The London Swedenborg Society will issue at their expense volumes III. and IV. of the English translation of *The Brain*, including the unpublished results of Tafel and Hyde, paying a price per page to be fixed later by Professor Dr. O. M. Ramström of Upsala. The price per page will also include work on the text by the editor of the Stockholm series, in which the original Latin will appear.

Chronological List and Documents.

The subscriptions for the past financial year, 1915—1916, still unexpended, will be used to finish the editing and typewriting of the *List*, the publication of which has been promised in England by the *New-Church Magazine* according to an arrangement proposed by the Swedenborg Society in 1913.

The *List* itself being provided for it is now suggested that the original documents be published in *The Swedenborg Archives* in five hundred copies in strictly chronological order. Translations may be issued in the *New-Church Magazine*, *New Church Life*, and *New-Church Review*, if that is found advisable in order to stimulate interest in the final publication of the materials in book form, or if

it seems best to concentrate the work, the whole mass might appear in the form of supplements to the *Journal of Eduction* or *New Church Life* in 1,000 copies, 500 being bound in with the original text in the *Archives* volume by volume until all documents by and concerning Swedenborg shall have been published.

ALFRED H. STROH.

Bryn Athyn, Pennsylvania.
January, 9th, 1917.

Report of Sub-Committee

on

Phototyping.

1: Your Sub-Committee has prepared a statement in regard to the phototyping work. This statement which is appended herewith presents reasons for continuing the work, and also estimates of the cost of same. The estimates are given for three alternate propositions:

(1): The completion of the theological MSS.
(2): The undertaking of work for one year, — which would permit of the phototyping of certain philosophical works also.
(3): The phototyping of all the MSS. theological and philosophical etc.

2: This statement was prepared with a view to its being sent to various bodies of the Church, together with a request for cooperation in one or other of the alternate propositions. But further consideration has convinced your committee that it would not be wise to send out an appeal for the continuation of the phototyping, until final settlement of the expenses incurred by the contributing bodies for the 1910 series has been made, or at any rate until those bodies know their exact liabilities for this series. Steps have already been taken by the Treasurer of the Academy looking to this end.

3: Your committee further recommends that if, and when, an appeal is made for the continuation of the phototyping work, that appeal should be addressed to every publishing body in the New Church, so

that opportunity may be given for more widely extended cooperation. The bodies in mind are:

London Swedenborg Society.
General Convention.
General Conference.
American Swedenborg Society.
Rotch Trustees.
Swedenborg Scientific Association.
Manchester Printing & Tract Society.
New Church Bokförlaget of Stockholm.
Missions Verein.

Signed for the Committee,

ALFRED ACTON,

Chairman.*

February 20, 1917.

Appendix.

In the meeting of representatives of New Church publishers, held in London, in 1910, arrangements were made whereby the London Swedenborg Society, the General Convention, the Academy of the New Church, the American Swedenborg Society, and the Rotch Trustees agreed together, to each contribute for a period of at least five years, a stated annual sum of money for the purpose of phototyping all the theological manuscripts of Swedenborg which had not previously been reproduced. Three years later these five bodies were joined by the General Conference.

The London Swedenborg Society was recognized as the agent for the contributing bodies, to receive the contributions and to direct the work.

The plan then, contemplated comprised The Adversaria**, 3 volumes; Arcana Coelestia, 5 volumes; Apocalypse Explained, 3 volumes; and Miscellanea Theologica, 1 volume.

All the above works have now been phototyped and printed, and the printed sheets are lying in Stockholm, ready for the binder; but the volume of Miscellaneous Theological works was not completed according to the original plan.

* The other members were Mr. E. C. Bostock, Treasurer, and Mr. Alfred Stroh, Editor.

** As the American Swedenborg Society did not consider that the phototyping of the Adversaria came under the objects contemplated by the Society's charter, the Society did not join in this part of the work.

At the London Conference no list of the proposed contents of this work was presented. It was understood, however, that it should include all the minor Theological works and fragments by Swedenborg that had not yet been reproduced, and also his theological letters, particularly the Beyer letters, which we believe were specifically mentioned.

As the printed volume now stands it comprised 449 pages, containing the following works ordered phototyped by the London Swedenborg Society, acting as the agent of the contributing bodies:

*Little work on Marriage.
*Justification, etc.
*Fragments for True Christian Religion.
Faith and Good Works (2d draft).
Correspondences and Representations.
Hieroglyphic Key.
Smaller index to missing work on Marriage.
Draft Index to Apocalypse Revealed.
Conversations with Angels.

The contents by no means include all the lesser theological manuscripts as contemplated in the agreement of 1910; for there remain, still unreproduced, the following works which would fill about 410 phototyped pages.

Dreams.
Index Apocalypse Revealed (2d draft).
Larger Index to missing work on Marriage.
Appendix to White Horse.
Notes on Formula Concordiae.
Ecclesiastical History.
Consummation of the Age.
Theological correspondence with Beyer, Bonde, von Höpken, Filenius, Mennander, Oetinger, etc.

We have no desire to inquire into the causes that have led to the decision to stop the work undertaken in 1910, before the phototyping then contemplated was completed. It is certain that owing to a variety of circumstances this step was acquiesced in by some, at least, of the contributing bodies. But it is equally certain that the work first contemplated is not yet completed, and we trust that the desire to complete this work is equally strong with the contributing bodies as it was in 1910. Indeed, one of the reasons that led the under-

* These three MSS. comprising 54 pages, were done by Mr. Stroh prior to 1910.

signed subscribing body to agree to winding up the unfinished undertaking of 1910, was the hope that by commencing *de novo*, the subscribing bodies might the more easily initiate steps for the prosecution of the work to its final completion.

Before proceeding further, we would call attention to the fruits of the work initiated by the General Convention in 1868.

Under the editorship of Dr. R. L. Tafel, ten volumes of Photolithographed MSS. were published in 1869—1870.

Dr. Tafel's work was resumed after a lapse of 30 years by Mr. A. H. Stroh, who, acting under the direction of the General Convention and the Academy of the New Church, edited the 3 volumes of the Spiritual Diary.

Subsequently to 1903 the London Swedenborg Society, acting, independently, produced the three phototyped volumes of the Index Biblicus.

Then came the arrangement of 1910, under which have been issued the works already noted.

The works thus far completed constitute 28 large volumes, which may be listed briefly as follows:

Photolithograph volumes:

I.	Early scientific MSS.	196
II.	Mathematics & Principia	448
III.	Journals & Scentific MSS.	195
IV.—V.	Brain	1,084
VI.	Anatomica	386
VII.	Worship & Love of God	114
VIII.	Theologica	310
IX.—X.	Apocalypse Explained	1,164
		3,897

Phototyped volumes:

XI.—XIII.	Spiritual Diary		1,796
XIV.—XVI.	Index Biblicus		2,040
XVII.—XIX.	Adversaria	2,216	
XX.—XXIV.	A. C.	4,138	
XXV.—XXVII.	A. E.	2,592	
XXVIII.	Misc. Theol.	449	9,395
			* 17,128

* In addition, the Prophets & Psalms, and parts of Schmidius' Bible annotated by Swedenborg, were reproduced separately, but are not uniform with the above series. The same remark applies also to a second reproduction of De Charitate.

With this great work already achieved, the special point that now lies before us is what, if any, steps can be taken to bring the work of reproducing Swedenborg's manuscripts to a final completion.

In a report by Professor Acton, a copy of which was sent to all the subscribing bodies, a complete list was made of all the manuscripts by Swedenborg not yet reproduced, and a plan was drawn up whereby these could be published in a series of 8 volumes. The first of these contemplated volumes is the Miscellanea Theologica, of which, at present, only 410 pages remain unreproduced; these 410 pages should be added to the 449 pages already printed, but not yet bound, so as to form one volume.

The remaining volumes numbered as a continuation of the preceding series — are:

Vols.	XXIX.—XXX.	Philosophica et Anatomica.
»	XXXI.	Journal and various Scientific & Philosophical notes.
»	XXXII.	Brain.
»	XXXIII.—XXXIV.	Scientific papers, excerpts etc.
»	XXXV.	Personal and official papers, correspondence, etc.

The thing most to be desired would be some arrangement between the bodies of the Church whereby the above volumes could all be added to the 28 volumes already printed, and thus comprise in one magnificent gift to posterity a reproduction of all that has been written by Emanuel Swedenborg.

The present time, however, does not seem an auspicious one for definitely entering into any such great undertaking. It is, however, of the utmost importance that at any rate the reproduction of the Theological MSS. be completed in their entirety, and the question before us is as to how this can be done.

The cost of reproducing this work will be about $1,832 including binding, and it is estimated that the work could be completed in about four months from commencement.

But here one important consideration should be borne in mind, namely, that to do this comparatively small work, it will be necessary to employ the services of a competent editor, and we can hardly question but that Mr. Stroh, fortified as he is with his experience in editing over 10,000 pages of phototyping, is eminently the most suitable man for this position; nor does it seem worthy of the dignity of the subscribing bodies to ask Mr. Stroh to undertake this work for a period of less than a year, or, at the very least, than six months.

There is, in addition, this other important consideration, the advisability of the whole of the New Church contributing, especially at this time, to the support of Mr. Stroh in Stockholm, for work covering a larger field than that of phototyping.

In the forties the Church united for the support of Dr. J. F. Im. Tafel in his great undertaking of publishing original editions of the Writings. Twenty-five years later the Church again united for the support of Dr. R. L. Tafel in the prosecution of those important researches in Sweden, the fruits of which were the 10 volumes of photolithographs, and those invaluable "Documents concerning Swedenborg" which have been so rich a mine for the students of Swedenborg's life and works.

By his experience with the Swedenborg manuscripts; by his investigations into the Swedenborgiana of Sweden, England, France, Holland, and other countries; by his great familiarity with the known and prospective sources of information leading to the investigation of matters connected with Swedenborg; and, not the least, by his facility in the Swedish language, — Mr. Stroh stands as perhaps the one man in the Church most competent to conduct any work connected with the searching out, the gathering up, and the reproduction of Swedenborg's manuscripts. But it is not only the reproduction of the manuscripts that we have in mind, when thinking of the value of supporting Mr. Stroh in Sweden, but another work of great importance which without Mr. Stroh's presence in Sweden can hardly be continued.

We refer in general to the investigations into Swedenborgiana, but in particular to the publication of Swedenborg's original texts in the magnificent edition of which the Royal Swedish Academy of Science has already published three volumes. There is every prospect that Volume 4 of this series, which is partly in print, will be issued during the summer of 1918. The series itself is to contain the whole of Swedenborg's Scientific and Philosophical works in 15 handsomely printed quarto volumes. For the purpose of publishing these volumes the Royal Swedish Academy of Sciences has, in the past, voted an appropriation as occasion required, and will doubtless do so again. The Academy holds at present a fund of over 4,000 Kronor for the purpose of this publication; and last year it appointed Mr. Stroh special editor of the series with a small honorarium. It is manifestly essential to students of Swedenborg that this edition shall be completed; and to all New Churchmen it is of importance, or at least of the greatest interest, that a learned body such as the Royal Swedish Academy of Sciences, should widely proclaim Swedenborg's works as

meriting the study of the most advanced modern cosmologists and anatomists Such proclaiming and such publication must surely redound to producing a state more favorable for the presentation of Swedenborg the Theologian. Certainly it has already greatly strengthened the cordiality existing between the Swedish authorities and the bodies of the New Church as represented by Mr. Stroh, — a cordiality which is manifested in the willing cooperation of these authorities with New Church bodies in the search after documents by and concerning Swedenborg, in the reproduction of his autograph manuscripts, and in the public honoring of his memory in England and Sweden.

To retain Mr. Stroh in Sweden, and to support him as the representative of New Church bodies, will go a long way to preserving this cooperation, and in particular, to ensure the publication of the Royal Academy series, and, in the immediate future, the publication of Volume IV. Without Mr. Stroh's services, it is even extremely doubtful whether this series, so happily commenced, can be continued at all, at any rate for some years to come. But with Mr. Stroh retained in Sweden, this work is practically assured in its entirety within a definite term of years.

We would lay some emphasis on this point, because, if the various bodies of the New Church discontinue their support, and Mr. Stroh in concequence ceases to represent them, there is a very real and imminent prospect that the whole work in Sweden will be suspended indefinitely, — an eventuality greatly to be deplored.

Mr. Stroh, acting solely in the service of the bodies of the New Church, has devoted his whole life to the study of Swedenborgiana, and to the acquirement of the multitudinous details of information, necessary to its successful prosecution. The value of that work is for the most part to the New Church, and to the New Church alone can Mr. Stroh look for employment in that special field for which he is so eminently fitted by training and experience. Quite apart from the loss to Mr. Stroh himself if this field be taken away from him, — practically the only field for which his life's work has peculiarly fitted him, — it would seem to be a most unwise thing for the bodies of the New Church to adopt any policy that would involve their losing the advantage of Mr. Stroh's training and ability.

In the light of what has been said above, we submit that for the bodies of the New Church to unite together merely for the reproduction of the 410 pages of Theological MS. yet unreproduced, would not be the wisest course to pursue if we keep in mind the general interests of the Church; for, we again repeat, it is of great benefit to

the New Church, not only to have a reproduction of Swedenborg's Theological manuscripts, but also to retain the services of Mr. Stroh, and the cooperation of the Royal Swedish Academy, and to enjoy the benefits of that learned body's enterprise in its edition of Swedenborg's Philosophical texts.

We have not said anything as to the value of the phototyping work itself, as we confidently assume that the bodies which so freely and generously responded to the call in 1910 are equally anxious now as then, to pursue to a successful conclusion the work then undertaken. Still, as we speak now to a larger audience, a word briefly reviewing the reasons which first led to the work of reproduction commenced in 1868, may be of use.

The whole of the New Church is united in the belief that the Lord has made his Second Coming by the revelation given to Emanuel Swedenborg. To us of the present generation is given a large part of those Writings in the autograph of Swedenborg himself; and upon us it devolves to do what we can to preserve the same advantage as far as possible for future generations. For, however, faithful and exact our printed editions may be, questions will always arise, the settlement of which can be reached only by reference to the original manuscripts; nor, as experience in the other fields shows, will exact students be satisfied with anything less. This may be readily realized if we call to mind the amount of time, labor, and money that has been devoted to searching out original manuscripts of the books of the Word, and of ancient secular writings; the jealous care with which they are preserved; and the reproductions of them that have been made under the direction of governments, of universities, and of learned societies. Such work can not hope to be financially reimbursed; it is always undertaken by the generosity of individuals, of societies, and of governments, who have a just appreciation of the value of such work to posterity.

It should be remembered that the work of reproduction has for its end, not only the preservation of manuscripts in case the original should fade, crumble away, or be destroyed, but also that these manuscripts may be available for present and actual use. For the successful production of a work by Swedenborg every editor should have access to the original manuscript or to a photographic reproduction thereof.

In illustration, we may cite the numerous corrections of texts — many of them involving points of great importance — which have been noted from time to time, as a result of comparison with the phototyped manuscripts.

Thus, when the Spiritual Diary was reproduced, the attention of the Church was called to numerous corrections of the printed text of that work, as noted by Professor Vinet, the results of whose examination were published in the New Church Review. Dr. Im. Tafel's painstaking care is too well known to need any defense, but even with this care, his work, like all human work, was shown to be not free from blemishes.

Again, comparison with the photolithographed manuscript of the Last Judgment (posthumous) revealed a number of important errors in the printed Latin text of the work; and the same also applies to the Indexes of the missing work on Marriage. The results of these comparisons were made use of in the recent edition of Swedenborg's Posthumous Theological Works, and their value acknowledged by the editor (see Volume II. p. 470).

Another example is the Hieroglyphic Key now being published in the New Philosophy. Comparison with the phototyped manuscript has shown a number of important errors in the printed text, the correction of which has greatly aided the present translator.

The point which we would press, is this, that none of the above textual corrections would have been possible without the reproduced manuscripts. Very few editors or students can consult the original, and fewer still can have access to them for a period long enough to make the necessary corrections of a whole work. And even if this were possible, anyone acquainted with the wear and tear on a photographic reproduction when used for careful and minute editorial work, will readily realize that the custodians of the original manuscripts would naturally and rightly be unwilling to have the integrity of the originals thus jeopardized.

The same arguments apply to the philosophical manuscripts in a degree only less as those works are comparatively of less importance than the theological. Still it is acknowledged by all the New Church bodies that the philosophical works are the ultimate signs of Swedenborg's preparation for his mission. But even apart from this question, the preservation of these philosophical manuscripts of Swedenborg is certainly of as great importance as the preservation of the many secular manuscripts, to the reproduction of which the learned world is so keenly alive. But in the case of the Swedenborg manuscripts, it is to the enterprise, the generosity, the courage of the New Church alone that we can look for their reproduction.

However, we do not propose to the contributing societies the immediate entry upon any publication plans to reproduce all of Swedenborg's writings. This may well be left to future consideration. The

immediate purpose before us now is the completion of the phototyping of the Theological manuscripts. But, as we have noted, the more general uses of the Church, the dignity of the contributing bodies, and even economy would [indicate] that while completing the 410 pages of the Theological manuscripts it would be wise to undertake in addition sufficient of the more important of the philosophical manuscripts to occupy a year's work, and thus, for that period at least, to retain the services of Mr. Stroh, with all that this involves.

We come now tho the practical proposals which the above considerations lead us to place before the contributing bodies, with a view to their cooperation.

Three alternative propositions are advanced:

> The *first* contemplates the reproduction merely of the 410 pages of theological manuscript and the employment of Mr. Stroh for six months.
>
> The *second* contemplates, in addition to these 410 pages, the reproduction of 753 pages of Philosophica, and the employment of Mr. Stroh for one year.
>
> The *third* merely lays before the reader a definite and concrete prospect for the future, in case the second proposition is adopted, and in case also that the contributing bodies, satisfied with the way the work has proceeded, wish to continue it, — the possibility namely of completing the work so as to include every writing by Swedenborg.

But whichever of these propositions may prove most acceptable to the contributing bodies, we would propose the following arrangement in the actual carrying out of the work.

> 1: That the general editorial charge of all the work be under the direction of one of the American bodies, this direction to include the laying out of the particular work to be done, under the general policy adopted by the contributors.
>
> 2: That the financial management shall be vested in the same body, this management to include all contracts with the Swedish firms, the payment of bills, and the settlement of all financial questions.
>
> 3: That this managing body shall make quarterly reports of progress and expenditure to all the contributors.

In this connection it should be stated for the sake of avoiding any possible misunderstanding, that the above propositions are simply a statement of what was done in carrying out the 1910 program, except that an American body is here substituted for the London Swedenborg Society, which body for the present, does not see its way to continuing this work of direction. During the past six years, the London Society has both directed what manuscripts were to be reproduced and has also had direct communication with the Swedish firms in the settlement of all financial obligations. Mr. Stroh's duties in Sweden, we learn, have been absolutely confined to supervising the actual carrying out of the photytyping of MSS. definitely designated by the London Swedenborg Society.

First Proposition:

1: That the contributing bodies unite together for the purpose of reproducing by phototyping the 410 pages of Theologica yet unreproduced.

2: That for the doing of this work the services of Mr. Stroh be engaged for a period of six months at a salary of $ 900,00.

3: That the binding of the 449 pages of Theologica already printed, be postponed until the volume can include the 410 pages above referred to. The London Swedenborg Society has expressed its agreement with this proposal.

Estimated Cost:

410 pp. Kr. 12.50 per page	Kr. 5,125.00		
23 reams paper Kr. 26.64 .	» 612.72		
binding*	» 1,045.00	equals $ 1,832.00	
	6,782.72		
Mr. Stroh's salary for 6 months		900.00	$ 2,732.00

* This item includes parchment, but since the parchment for the volume of Theologica in which it is proposed to bind these 410 pages, has already been purchased and charged to the 1910 series, the cost of binding will be considerably below 1,045.00 Kronor.

Second Proposition:

1: That the contributing bodies unite together for the purpose of reproducing by phototyping (a) 410 pages of Theologica to be bound in with the 449 pages of Theologica already printed; (b) an additional volume of 753 pages of Philosophica.

This latter volume will consist of codices 65, 74, and 54, as noted in Professor' Acton's report page 13. In general the contents are posthumous tracts, dealing with the Soul and the Blood, the Fibre, the Doctrine of Degrees, and the Rational Paychology.

2: That inasmuch as the American Swedenborg Society is precluded by its Charter from engaging in the publication of any but the Theological works of Swedenborg, the contributions of this Society be devoted entirely to the reproduction of the 410 pages of the Theologica.

3: That the services of Mr. Stroh be engaged for a period of one year at a salary of $ 1,800.00.

Mr. Stroh is confident, and is willing to guarantee at his own risk, that the work outlined above will be completed within one year from time of commencement. The progress made in the past work during the year 1916 fully justifies confidence in this guarantee.

Estimated Cost:

410 pp. of Theologica as above		$ 1,832.00
753 pp. Philosophica Kr. 12.50	Kr. 9,412.50	
42 reams paper Kr. 24.64	» 1,118.88	
binding	» 1,045.00	3,126.00
Mr. Stroh's salary		1,800.00
		$ 6,758.00

Third Proposition:

Note: This is not put forward as a proposition to be considered with a view to present adoption. It is put forward in order that the contributing bodies my see at a glance how the phototyping can be continued in case they desire to continue it, and are satisfied as to the smooth and efficient progress of the work contemplated in the first or second propositions in case either of these is finally accepted. The contents of the volumes are noted in Professor Acton's Report page 13 seq; but Codex 36 has been transferred from Volume II. to Volume III.

Vol. I.	410 pp. Theologica		Kr. 6,782.72	$	1,832.00
II.	753 pp. Philosophica		» 11,576.38	»	3,126.00
III.	757 pp. Senses, Generation, Theological, & Philosophical notes, etc.				
	printing Kr. 12.50	Kr. 9,462.50			
	41½ reams paper 26.64	» 1,105.56			
	binding	» 1,045.00	» 11,613.06	»	3,136.00
IV.	Journal; Notes & drafts for Principia & E A K; excerpts 1,112 pp.				
	printing Kr. 12.50	Kr. 13,900.00			
	61½ reams paper 26.64	» 1,638.36			
	binding	» 1,045.00	» 16,583.06	»	4,477.00
V.	Brain 1,116 pp.				
	printing 12.50 . .	Kr. 13,950.00			
	62 reams paper .	» 1,651.68			
	binding	» 1,045.00	» 16,646.68	»	4,494.00
VI.	Scientific papers, inventions, excerpts, 889 pp.				
	printing 12.50 . .	Kr. 11,112.50			
	49 reams paper 26.64	» 1,305.36			
	binding	» 1,045.00	» 13,462.86	»	3,635.00
			Kr. , ,	$	, ,

				Kr. 76,665.06	$ 20,700.00
Vol. VII.	Scientific excerpts, 1,052 pp.				
	printing . . .	Kr. 13,150.00			
	58 reams paper	» 1,545.12			
	binding . . .	» 1,045.00		» 15,740.12	» 4,250.00
VIII.	Personal & official papers, etc., autographs, notes, etc., 737 pp.				
	printing . . .	Kr. 9,212.50			
	40 reams paper	» 1,065.60			
	binding . . .	» 1,045.00		» 11,323.10	» 3,058.00
				Kr. 103,728.28	$ 28,008.00

Annual expense if work is distributed over a period of eight, seven, and six years respectively:

		Annual cost	Total cost
Over a period of eight years:			
Printing etc.	$ 3,501.00		
Stroh	» 1,800.00	$ 5,301.00	$ 42,408.00
Over a period of seven years:			
Printing etc.	$ 4,002.00		
Stroh	» 1,800.00	» 5,802.00	» 40,614.00
Over a period of six years:			
Printing etc.	$ 4,668.00		
Stroh	» 1,800.00	» 6,468.00	» 38,808.00

* * *

In order to reach a definite conclusion so that any work decided on may be commenced next Fall, or as soon thereafter as Mr. Stroh returns to Sweden, we would ask

(a) Whether your body is willing to support either of the alternative propositions 1 or 2?

(b) In case of an affirmative answer, what maximum contribution will your body be able to make for this purpose?

For the information of your body when considering these questions, we add the following list of subscribers to the 1910 series:

	Phototyping:		A. H. Stroh Salary	
Academy of the New Church .	250	$ 1,250.00	120	$ 600.00
London Swedenborg Society . .	250	» 1,250.00	120	» 600.00
General Convention	200	» 1,000.00	100	» 500.00
General Conference	100	» 500.90	—	—
American Swedenborg Society .	100	» 500.00	20	» 100.00
Rotch Trustees	50	» 250.00	—	—
		$ 4,750.00		$ 1,800.00
				$ 4,750.00
			or a total of	$ 6,550.00

It is probable that the London Swedenborg Society and perhaps also the General Conference will not be able to join in the work for the present, or at any rate will be able to contribute only a smaller sum than formerly.

The Academy of the New Church is willing to adopt either propositions 1 or 2, but it would strongly recommend the second proposal with a view to continuing the work as outlined in the third proposition if found practicable.

Whichever plan is adopted, the Academy of the New Church is willing to contribute $^{5}/_{12}$ of the amount expended.

Under proposition 1 this would be $ 764.00, leaving $ 1,068.00 to be raised by other bodies.

Under proposition 2 the amount would be $ 2,816.00, leaving $ 3,942.00 to be raised by other bodies.

It may be added that while the greatest care has been used in making the estimates in the above statement, absolute accuracy is impossible; we believe, however, that the figures are about correct. There will, however, be additional expenses in the way of incidentals, including insurance, freight, etc., for which a small additional percentage should be ample allowance.

Annual Report of Work in Sweden on the Reproduction of Swedenborg's Manuscripts, 1916—1917.

Phototyping.

Reports distributed during the year 1916 have recorded the completion of the printing of eighteen volumes of the phototyped edition of Swedenborg's manuscripts. The present report (which will be sent to the six bodies which have contributed to the expenses for publishing the phototyped volumes, — namely, in the United States of America, the General Convention of the New Jerusalem, the Academy of the New Church, the American Swedenborg Printing and Publishing Society, and the Rotch Trustess, and in England, the Swedenborg Society, and the General Conference of the New Church, — and also to the Swedenborg Scientific Association, as that body is directly interested in the publication in Sweden of Swedenborg's scientific works, mentioned below after the section on phototyping) will summarize the past results, present status, and future prospects of the work in Sweden, and will propose the vigorous prosecution of the publication of the scientific and documentary series during the coming year, or until work on the phototyped edition can be resumed. A detailed historical and descriptive article explaining the present condition of the work in Sweden will be contributed to the *New-Church Review* for July, under the title, "Swedenborg at Stockholm and Upsala".

The phototyped edition of Swedenborg's MSS. now comprises eighteen folio volumes entitled: *Emanuelis Swedenborgii Autographa, Editio Phototypica.* Vols. I to VI contain the "Spiritual Diary" (distributed in 1907) and "Index Biblicus" (ready for distribution); Vols. VII to XVIII the "Explanations of the Word, or Adversaria", "Arcana Cœlestia", "Apocalypse Explained", and "Miscellaneous Theological Works". Since 1910 the series of twelve volumes beginning with Vol. VII of the edition has been seen through the press, having been authorized by a meeting of representatives of American and British bodies on July 11th, 1910, in London, immediately after the International Swedenborg Congress. But on account of the unexpectedly great expenses for the 1910 series, the last volume has been curtailed by the exclusion of numerous small theological manuscripts, documents, and letters by Swedenborg. This has been done with the authority of the Council of the Swedenborg Society; but this volume of *Miscellanea Theologica* may still be completed as originally planned in

1910, if the American contributors will authorize the printing in order to make accessible the remaining theological MSS. of Swedenborg.

Although the phototyping of the volumes hitherto authorized (with the exception of the matter just mentioned excluded from the *Miscellanea Theologica*) was finished in June, 1916, as intended and promised, and although all editorial work was completed by September, the binding, distribution, and final settlement of the printer's and binder's accounts still remain; and as the editor left Stockholm in December on a visit to America, no further work has been begun. The officals in America representing the phototyping interests in Boston, New York, and Bryn Athyn are unanimous in their decision that no new phototyping shall be considered until the liabilities for the previous volumes are known and settled. The editor has reported the printer's final account for the 1910 series, closed September 23rd, showing a total of kr. 102,105.72, and a balance of kr. 12,412.22 unpaid. The intention in London, according to recent letters, is to send out the account for each work separately, to settle for the works as they are bound, and to distribute them to the contributors according to the proportion of their contributions. The binder has stipulated that he be paid work by work before distribution. When the editor left Stockholm in December, the *Index Biblicus* had been bound (in September), the *Adversaria* was stitched, and several other volumes had been folded, while the remainder lay flat in packages or piles waiting for the early volumes to be disposed of.

Scientific Works and Chronological List.

The editor's engagement having ceased last year, he now urges the desirability of proceeding with the scientific and documentary work for the next year, or until new phototyping can be authorized. The present status of the lines of work which it is proposed be now continued may be seen from the following synopsis:

1. The edition of Swedenborg's scientific texts, *Opera de Rebus Naturalibus*, published under the auspices of the Royal Swedish Academy of Sciences, is planned to contain most of Swedenborg's scientific works, both manuscript and printed. Three volumes have appeared, 1907—11, a fourth is half printed, and the remaining half ready for the compositor, while thousands of pages of manuscript have been copied for subsequent volumes of the series. This represents a great investment of money, labor and research work by the

Swedenborg Committee of the Royal Swedish Academy of Sciences, and by other bodies and individuals. On May 26th, 1915, the Royal Swedish Academy of Sciences, on the recommendation of the Swedenborg Committee, voted to pay the editor kr. 20 per sheet of 16 pages for future volumes, funds permitting, and to appoint the undersigned as editor of the series. The Swedenborg Fund of the Academy of Sciences at present amounts to over 4,000 kronor. Subscriptions to sustain the work have been promised in England, America, Sweden, and elsewhere.

2. With the consent of the London Swedenborg Society, in 1913, the editor sent to the Royal University Library of Upsala the English MS. of the third and fourth volumes of "The Brain", as edited by Dr. R. L. Tafel and the Rev. James Hyde. The intention is that Professor O. M. Ramström of Upsala, with the assistance of the editor of the Stockholm series of texts, prepare for press the two volumes, the London Swedenborg Society paying for the work, and having the use of the unpublished matter intended for the volumes of the Stockholm series, *Opera de Rebus Naturalibus.*

3. With the consent of the London Swedenborg Society, in 1913, the editor sent to the Library of the Royal Swedish Academy of Sciences the documents collected by Tafel and Hyde for use in the "Chronological List", and in a proposed new edition of "Documents". The editor was also instructed by the Council of the London Society, in December, 1913, to publish the "Chronological List" in the *New-Church Magazine.* The editor of the *Magazine*, the Rev. J. R. Rendell, B. A., has just reaffirmed his intention of publishing the work *seriatim*, eight pages every issue. Other periodicals will be furnished with translations and articles explaining the collections, and preparing the way for the final publication in book form of a new collection of "Documents" and of an extended "Life of Swedenborg".

Financial Support of the Proposed Work.

The English interests have expressed their intention of withdrawing from the phototyping work with the completion and distribution of the 1910 series. They have promised, however, to support the publication of the scientific and documentary results as explained above. Although the phototyping must be discontinued for the present, the Rev. Alfred Acton has estimated, on the basis of facts and figures supplied by our previous experience, that the remaining MSS. of Swedenborg, including all of Swedenborg's documents, letters, and frag-

ments of philosophical, scientific, and miscellaneous content, will (if the unreproduced theological matter be previously added to the *Miscellanea Theologica*) fill eight additional volumes. Pending the resumption of the work of phototyping, it is hoped that the American interests will combine to send the editor back to Sweden, as in 1906, to continue the publication of the magnificent edition of Swedenborg's scientific works under the auspices of the Royal Swedish Academy of Sciences. The publication of additional volumes of this monumental edition and of the collected bibliographical and documentary results will make accessible much new and valuable matter, and will also be a concrete return for the money previously invested for many years in copies and investigations.

Thanking the societies for their support of the work in Sweden during the past fifteen years, and trusting that it will be continued, I remain,

Yours faithfully,
ALFRED H. STROH.

Boston, Massachusetts, U. S. A.,
April 27th, 1917.

A Special Report to the Board of Directors of the Swedenborg Scientific Association.

A general statement concerning the work in Sweden has been given in the editor's Annual Report dated April 27th and distributed to all the American and British Societies interested. So far as the general conditions are concerned nothing need be added to the Annual Report, but in view of some possible misunderstanding it should be observed that the phototyping account, and the account for the editor's salary, have never, since 1902 and up to date, been connected with the special accounts for the scientific and documentary series specified below. The British and American bodies have supported the phototyping and the editor at an increasing rate up to June 30th, 1916, it being understood that all other editorial work was secondary. Although plans exist for the continuation of the phototyping after Vol. XVIII., the British interests desire to withdraw, and the American officials have unaminously taken the position that no further work should be considered until the volumes previously authorized shall have been bound and paid for.

The editor's engagement having ceased on June 30th, 1916, he has been specially supported by contributions from Bryn Athyn from the

Academy of the New Church and from a private source, up to June, 1917, amounting to $ 1,750, equivalent to the previous salary since 1910 of £ 360 per annum. This income for the present financial year must, however, also cover all travelling expenses from Sweden to America, in America, and back to Sweden. Further losses since the outbreak of the war have been caused by high prices, by the extraordinary fluctuations of the exchange, and by long delays in the payment of grants. The editor has thus far received no payment for the editing of the scientific and documentary series, having done that work gratis, but will receive small sums in the future for the volumes of the Stockholm edition *Opera de Rebus Naturalibus*, for Vols. III. and IV. of *The Brain*, and for the remainder of the *Chronological List*. But any honorarium of that kind will be received only after the publication of the works mentioned. It seems proper to make these conditions quite plain, for some American officials connected with the work in Sweden have supposed that the editor has been paid for other work than the phototyping, which has never been the case. As for the festival and other publications, they have also been done gratis and are the property of the New Church Publishing Society of Stockholm and of the other bodies which issued them.

The above facts will explain how the work in Sweden has been financed up to date. Besides the phototyping there are today three separate publications in hand which are quite distinct from each other. They are:

1. Swedenborg's *Opera de Rebus Naturalibus*, three volumes of which have been paid for by Professor and Mrs. Gustaf Retzius. By volumes sold a Swedenborg Fund of over 4,000 kronor has been formed in the care of the Treasurer of the Royal Swedish Academy of Sciences. Half of volume IV. is also printed and paid for and thousands of pages of copy exist for the future volumes of the series, to contain most of Swedenborg's scientific works. The editor will receive kr. 20 per sheet of 16 pages for future volumes of this series. Subscriptions for each volume will pay for the next until the series is finished.

2. Vols. III. and IV. of *The Brain* lie in manuscript as edited by Tafel and Hyde. The London Swedenborg Society has agreed to pay Professor Ramström and through him the editor of the Stockholm series a sum per page to be fixed after further consultation. As the Latin texts of the Stockholm series will be of great value in revising for press the remainder of the English translations in *The Brain* much valuable work for both publications can be produced by the colla-

boration of the editor with Professor Ramström who will also prepare Introductions for the Stockholm series.

3. After typewriting and distributing the remainder of the *Chronological List* the editor proposes that the small sum possibly unexpended of the fund subscribed for that work be retained by him for his prolonged editorial labors in this connection. While the publication of this work and of the collected documents in New Church periodicals will probably not be paid for, it may be that the final appearance in book form of these important and voluminous results of research and editorial labor will be made possible in such a way as to reimburse the editor for his travels and other expenses in this connection.

In presenting the above statement of the financial condition of the work in Sweden, the editor hopes that through the good offices of the Swedenborg Scientific Association, as in 1906, some arrangement for support can be made so that the publication of Swedenborg's texts at Stockholm may be continued.

Respectfully submitted,

ALFRED H. STROH.

New York,
May 13th, 1917.

Addendum.

The editor's Annual Report, and the special Report now submitted, represent not only the result of much discussion in Bryn Athyn, New York and Boston since January, 1917, but also special plans evolved during recent meetings with the individual members of the Board of Directors of the Swedenborg Scientific Association in Bryn Athyn and Boston. It has furthermore been suggested, and the suggestion has been favourably received in Boston and Bryn Athyn by a number of officials, that before the meetings of the General Convention and Swedenborg Scientific Association an informal meeting of representatives of all American bodies hitherto supporting the work in Sweden be held in Philadelphia next Saturday morning, that date having been suggested by Mr. B. A. Whittemore as the most convenient. The meeting proposed might be called by the officials of the Swedenborg

Scientific Association; as the Association's representative abroad since the year 1904 I venture to raise the question.[1]

A. H. S.

Bryn Athyn, Pennsylvania,
March 14th, 1917.

The Swedenborg Scientific Association and the Work in Sweden.

Editor of the New-Church Weekly:

The current issue of your periodical appeared in this country last week simultaneously with the *New-Church Review* for July. Both publications contain references to the work of the Swedenborg Scientific Association and to *The New Philosophy*, the quarterly of the Association. As the representation abroad of the Association for many years I feel impelled to write some explanations in defence of the policy and work of the body which I have the honor to represent, for the activities and publications of the Association have been reviewed but little in Europe in New-Church periodicals.

The notice given in the *Review* is favourable, being from the pen of the editor, the Rev. Lewis F. Hite, who is now the President of the Swedenborg Scientific Association in succession to the late Dr. Frank Sewall. The criticisms in the *Weekly* are unfavourable and tend to throw discredit upon the Association. As the *Weekly* calls on Professor Hite to change the Association's policy his statement in the *Review* is very timely as showing what the policy of the Association has been and is today. My intention in the present communication is not to discuss the points of translation referred to in the *Weekly*, but to indicate instead what the general and particular uses of the Association are, what considerable results have been obtained, and how closely the work of this body has been associated with the work in Sweden, a work which has been supported with much sympathy in England during the past decade by the Swedenborg Society, by the Conference of the New Church, and by the New-Church periodicals.

The purposes of the Association and of its organ are thus given in every issue of *The New Philosophy:*

[1] The meeting was called by Professor Lewis F. Hite, President of the Swedenborg Scientific Association.

»The New Philosophy is a quarterly magazine devoted to the exposition of the scientific and philosophical principles contained in the works of Emanuel Swedenborg. As the organ of the Swedenborg Scientific Association it will be the means of promulgating the uses undertaken by that body.

"This Association was organized on May 27th, 1898, for the following purposes:

"I. The preservation, translation, publication and distribution of the Scientific and Philosophical works of Emanuel Swedenborg.

"II. The promotion of the principles taught in these works, having in view likewise their relation to the science and philosophy of the present day."

During the nineteen years of the Association's work, recorded in *The New Philosophy* and elsewhere, there has been much useful cooperation with American, British and Swedish institutions interested in the same purposes. The Association has been concerned in publishing several volumes of Swedenborg's scientific works otherwise inaccessible in English and has caused to be copied numerous unpublished works by Swedenborg with a view to their appearance in print. One of these texts, Swedenborg's work on Salt (*De Sale*) has been edited for the Association by the Rev. Alfred Acton, who has labored with great success for many years as editor for the Association. I need not quote the addresses and communications of the late President of the Association, Dr. Frank Sewall, referring in detail to its history, progress, and activities. I believe, Mr. Editor, that a careful perusal of the files of *The New Philosophy*, and of the publications issued by the Association, will prove that the purposes of this body, and the results accomplished by it, are of the same scope and character as those of the old Swedenborg Association of England which once labored so successfully in the publication and promulgation of Swedenborg's scientific and philosophical works under the leadership of Dr. J. J. Garth Wilkinson and the Rev. Augustus Clissold. There is plenty of room for work in this field by every available worker in America and Europe. Instead of criticism and dissolution there should be cooperation and unanimous effort: the harvest is great the laborers few.

In writing of this needful cooperation I recall the strong position taken by the Association on three occasions, in 1902, 1906, and 1917, to have the writer of these lines sent to Sweden on missions to publish Swedenborg's MSS. and to investigate Swedenborgiana. Without this policy of the Swedenborg Scientific Association it is probable that the work in Sweden would have been abandoned long ago. In

any discussion of the policy and results of this work, which my British friends have endorsed and supported on numerous occasions, the essential part played by the Swedenborg Scientific Association should not be overlooked. The impulse and encouragement given by the Association have been invaluable and fruitful of great results. Mr. Editor, I plead for a fair examination of the published records in any future discussion in your periodical.

The present status of the work in Sweden since my departure for America last December is one of great indecision, a condition produced by the war and financial stringency and exhaustion. Nevertheless there is a plan on foot in America to continue the phototyping of Swedenborg's theological works, and possibly of the remaining philosophical, scientific and miscellaneous manuscripts not yet reproduced. But if this should prove impossible of accomplishment at the present time there is an alternative plan, recently proposed by the Association, to continue the work of editing Swedenborg's scientific texts in the magnificent edition of the Royal Swedish Academy of Sciences, *Opera de Rebus Naturalibus*. Simultaneously the connected bibliographical and documentary work previously in hand may be pushed to a conclusion. The Association's Memorial to the Convention and Academy will appear in the forthcoming July issue of *The New Philosophy*.

It is hoped in America by all who have followed the work in Sweden that the appearance of the "Phototyped Manuscripts", in some eighteen uniform folio volumes, and of additional volumes of the scientific texts, published by the Royal Swedish Academy of Sciences, will tend to revive interest in the work in Sweden as a whole, and will finally reunite all of the American and British bodies formerly combined in the support of these uses in a new mission, the object of which would be to bring to a conclusion the series of publications still unfinished. Much has been accomplished, and possibly after the war is over the remainder of the work can be undertaken by united action as in 1910 after the International Swedenborg Congress. Possibly this could be done in 1920, for there may be a second International Congress that year in Boston. There is a Convention committee in charge of the plan. The one hundreth meeting of the Convention falls in the same year, also the Tercentenary of the landing of the Pilgrim Fathers in 1620. I found considerable interest at Boston in the question of the proposed Congress in 1920, but great uncertainty on account of the war.

During the Centennial Convention in Philadelphia, held in May, I also attended meetings of the New Church Evidence Society, and

after the Covention of the Swedenborg Scientific Association, reporting fully to both bodies on investigations in Sweden. There was also an informal Conference on the work in Sweden, on June 22nd, attended by representatives from Boston, New York and Bryn Athyn, at which a good deal of formal business was transacted in an informal way.

ALFRED H. STROH.

Bryn Athyn, Pennsylvania, U. S. A.,
Aug. 1st, 1917.

Continuation of the Work in Sweden, 1917—1918.

In order to bring the history of the work in Sweden up to date after the Editor's return to Stockholm and Upsala in September, 1917, the following articles, reprinted from the *New-Church Messenger* for August 15th, 1917, and January 30th, 1918, will serve to complete the account of the phototyping furnished in the recent Annual Report for 1917—18.

Later results, since the distribution of the Report and Prospectus printed belou, will be found below after the articles quoted from the *Messenger*, and in addition the editor proposes to report quarterly to the American Societies.

The Quarterly Reports will be forwarded to the Treasurers of the Academy of the New Church and Convention of the New Jerusalem, and also to the Secretary of the Convention for the *Messenger*, and to the editor of *The New Philosophy*, as the Scientific Association is also directly interested in the Work in Sweden,

An Informal Conference to consider the Work of Mr. Stroh in Sweden.

During the meeting of the General Convention an informal conference was held of representatives from some of the bodies interested in the work of phototyping Swedenborg's Manuscripts. The situation is as follows: In 1910 at the Swedenborg Congress in London, the various bodies in England and America agreed to carry out the work of phototyping the more important theological manuscripts of Swedenborg which had not yet been reproduced by photolithography and phototypy. The details of the work at that time were left to the decision of the committee of the Swedenborg Society of London. This work has now been brought to a close, and the contributing bodies have decided not to go forward with any further work until the volumes now completed have been bound and paid for.

There remain, however, a number of manuscripts not yet reproduced by phototypy which should be published to complete the work of reproducing all the extant manuscripts of Swedenborg. These will make eight more volumes. The Conference was held to consider the problem of continuing the work, especially with the view of employing Mr. Stroh without interruption, while his service are available. It also was developed that in closing the 1910 Series, about 400 pages of theological matters were left out of the last volume, which properly should have been included.

There were present from the General Convention Messrs. James Richard Carter, Clarence W. Barron, B. A. Whittemore and Rev. John Whitehead, and representing the American Swedenborg Printing and Publishing Society, Messrs. Eben Sugden and Ezra H. Alden; representing the Swedenborg Scientific Association, Rev. L. F. Hite and Rev. Alfred Acton, and representing the Academy of the New Church, Mr. E. C. Bostock and Rev. C. Doering. The Rev. L. F. Hite acted as Chairman, and the Rev. John Whitehead as Secretary.

It was clearly understood that the meeting was quite informal, and that the persons present were acting individually, and had no power to act for the bodies from which they came, not having been officially appointed.

A number of propositions were made looking to the continuation of the work without interruption. One to complete the entire work at a cost of about $40,000. Another that Mr. Stroh be engaged for one year and that the 400 pages of *Theologica* be phototyped; also that Mr. Stroh, after completing that work, devote his time to bringing out the fourth and succeeding volumes of the Academy of Sciences series of publications of Swedenborg's scientific works.

These propositions were met with the statement that all the bodies concerned had decided not to undertake any further obligations until all present indebtedness had been cleared off. Also that the English brethren had said that under present conditions they could not take part in any further work.

After much discussion Mr. J. R. Carter said that he and Mr. Barron, on behalf of the Convention interests, would guarantee to pay each $500.00, making $1,000.00, if the Academy would guarantee another $1,000.00. This sum was to be used in phototyping the 400 pages of *Theologica* to be included in the last volume of the 1910 series. The representatives of the Academy finally agreed to this proposition and the Conference adjourned.

This decision provided for the completion of the 1910 series as originally designed. It is hoped that with the presence of Mr. Stroh

in Sweden to complete this work, some further provision for his support and the final completion of the phototyping of all Swedenborg's manuscripts may be worked out, after the old obligations are liquidated.

JOHN WHITEHEAD.

The Phototyping of Swedenborg's Theological Manuscripts.

Before returning to Sweden in August the writer contributed to American New-Church periodicals articles explaining the history and status of the phototyping of Swedenborg's manuscripts. (See the *New-Church Review* for July and *New Church Life* for September.) At the same time the Rev. John Whitehead reported in the Messenger, August 15th, the results of an "Informal Conference to consider the work of Mr. Stroh in Sweden". To Mr. Whitehead's report may be added that after the Conference, held on May 22nd, it was decided after a lively correspondence between several gentlemen present at the meeting, to proceed at once with the phototyping of the remaining unreproduced theological manuscripts. Besides the names mentioned in the Messenger for Aug. 15th of gentlemen present at the meeting there should be added that of Mr. George C. Warren, one of the Rotch Trustees. The writer of this communication was also present during the early part of the Conference.

Having returned to Sweden the editor made arrangements early in September to continue the printing of Vol. XVIII of the Phototyped Manuscripts. The previous volumes of the series, edited with the general Latin title, *Emanuelis Swedenborgii Autographa, Editio Phototypica*, are the following: 3 vols. of the "Spiritual Diary", 3 vols. "Index Biblicus", 3 vols. "Adversaria", 5 vols. "Arcana Coelestia", 3 vols. "Apocalypse Explained". These seventeen large folio volumes are being bound uniformly in parchment, but none of the works have been distributed except the "Spiritual Diary". When the editor left Sweden for America in December, 1916, the "Index Biblicus" had been bound since the autumn, and the "Adversaria" was in progress. At the present time all of the works except the "Apocalypse Explained" have been bound and may be distributed when conditions permit. The last volume, "Miscellanea Theologica", contains numerous smaller theological works, and it is this Vol. XVIII of the series which will now be described in so far as it is finished and planned.

During the first mission to Sweden, in 1902—03, when the phototyping of the "Spiritual Diary" was in progress and the "Index Biblicus" about to be phototyped, it was decided by correspondence to

endorse the editor's proposal to begin a volume of Miscellaneous Theological Works. Proofs of the following works were sent to the officals of the Convention and Academy:

1. Little Work on Marriage (*De Conjugio*).
2. Justification, etc. (*Annotata de Calvino*).
3. Fragments for True Christian Religion (*Additiones in Veram Christianam Religionem*).

After 1903 this volume was discontinued, but in the 1910, on July 11th, immediately after the International Swedenborg Congress, representatives of the American bodies met with the Committee of the Swedenborg Society, London, and agreed upon the continuation of the phototyping in what is now usually referred to as the "1910 series". At that time the "Spiritual Diary" and "Index Biblicus" made possible the first six volumes of *Emanuelis Swedenborgii Autographa*, *Editio Phototypica*, and the "1910 series" involved twelve additional volumes, subsequently arranged as enumerated above. After much discussion with the Rev. Isaiah Tansley, and later with the Rev. Arthur Wilde, it was decided to include in the volume of *Miscellanea Theologica* the following works:

4. Faith and Good Works (2nd draft).
5. Correspondences and Representations.
6. Hieroglyphic Key.
7. Smaller index to missing work on Marriage.
8. Draft index to Apocalypse Revealed and Conversations with Angels.

Nos. 1 to 3, done in 1903, filled 54 pages, and Nos. 4 to 8, done by June, 1916, brought the total number of pages in the volume to 449.

Other unreproduced theological MSS., excluded because of the expense, are the following, here noted with the others previously mentioned, according to the titles given in Professor Alfred Acton's unpublished Report of January, 1917, accessible in Boston, Bryn Athyn, and Sweden.

9. Index Apocalypse Revealed (2nd draft).
10. Larger index to missing work on Marriage.
11. Dreams.
12. Appendix to White Horse.
13. Notes on Formula Concordiæ.
14. Ecclesiastical History.
15. Consummation of the Age.
16. Theological correspondence with Beyer, Bonde, von Höpken, Filenius, Mennander, Oetinger, etc.

It should be added that during the editor's visit in America various theological fragments by Swedenborg were photographed, the intention being to include in the volume of *Miscellanea Theologica* all theological fragments, marginalia, and annotations by Swedenborg not hitherto photolithographed or phototyped. Such materials also exist in England, France, Holland, Belgium, and Sweden, and many photographs have been made from time to time.

At the present time three works, Nos. 9 to 11, are being photographed and phototyped, increasing the volume to page 618. Nos. 9—10, originally placed after No. 11, have been taken first so as to follow immediately upon the closely related Nos. 7—8. Proofs of the pages will be forwarded from time to time to the Libraries at Cambridge, Mass., and Bryn Athyn, Pa., as has been done for many years. Formerly proofs were also sent to the Swedenborg Society, London, although no proofs of the *Index Biblicus*, undertaken by the Society in 1903, have been forwarded to America.

From the above account it will be seen that the great work of phototyping Swedenborg's *Theological* MSS., in progress since 1896, has again been resumed after having come to a standstill in June, 1916. The older series of Photolithographed Manuscripts, *Emanuelis Swedenborgii Autographa*, *Editio Photolithographica*, edited at Stockholm by Dr. R. L. Tafel, ten volumes folio, 1869—70, will be supplemented by the new series of eighteen volumes folio. According to Professor Acton's Report, the remaining philosophical, scientific and miscellaneous MSS. of Swedenborg, not reproduced, or reproduced incompletely in the Photolithographed Manuscripts, would fill seven additional folio volumes, thus making accessible all of Swedenborg's MSS. in photographic reproductions.

The volume of *Miscellanea Theologica* having been completed during the next few months, the great question of the continuation of the phototyping will become actual. In 1910 there appeared at Stockholm three recently found scientific MSS. by Swedenborg, phototyped as *Swedenborgiana*, Part I., folio, pp. 86. This was one of the festival publications of that memorable year issued in celebration of the International Swedenborg Congress and of the Swedenborg Society's Centenary. The expenses for this and other publications were met by a fund supplied by the Commodore-Captain O. W. Nordenskjöld and increased by Mrs. O. W. Nordenskjöld, the work being published by the Nykyrkliga Bokförlaget, or New-Church Publishing Society of Stockholm. Some years ago I was authorized to sell this volume I., printed in 110 copies as usual, to the British and American bodies interested in the phototyping, at cost price, kr. 550. One of the

American New-Church bodies has agreed to buy it, and in this way a beginning may be made with the phototyping of the first volume of Swedenborg's unreproduced scientific MSS. by continuing after page 86. I venture to suggest to all bodies and individuals interested in this important use that the above proposed solution is the most practical one possible, for it would permit of the immediate continuation of the phototyping on the basis of a volume already begun as soon as the *Miscellanea Theologica* shall have been completed.

It is a matter of deep regret to all students of Swedenborg that untoward conditions have caused the British New-Church bodies to retire from the work of phototyping Swedenborgs Manuscripts. On the other hand it is a matter of the greatest satisfaction that the American bodies have decided to finish the phototyping of the *theological* works at the present time, thus bringing to a conclusion a work undertaken in 1868 by a Committee of the General Convention, that is, so far as the theological MSS. are concerned. For it is a striking fact that the old series contained many scientific and philosophical, as well as theological MSS., while the new series has thus far been confined to theological works and fragments. The student will, however, never rest satisfied until every line by Swedenborg has been made accessible by photographic reproductions. Only in this way can scholars in every part of the world examine the entire course of Swedenborg's literary progress and finally edited results, only in this way can editors in any given case control the accuracy of texts, translations and interpretations. Everyone acquainted with the literature will admit the necessity of these photographic reproductions, and every student of texts will acknowledge the importance of reproducing everything extant today so as to avoid future loss or confusion. In a further communication I shall return to the question of the progress and condition of the work in Sweden.

ALFRED H STROH.

Uppsala, Sweden,
Oct., 29th, 1917.

Scientific Works and Swedenborg Archives.

The photographing of the Theological MSS. has proceeded after the phototyping came to a standstill in January with page 618 of *Miscellanea Theologica*, and the editor has recommended that the photographing of two volumes of Scientific MSS. be proceeded with so that when paper can be obtained rapid progress can be made with the printing.

Being without any definite instructions except as stated in the reports of Professor Acton and the Rev. John Whitehead, the editor has since December, 1917, devoted his time to the writing of numerous articles concerning the work in Sweden in all of its aspects for the American, British, and Scandinavian New Church periodicals, and in proceeding with the scientific and documentary work.

Acting according to instructions received from Professor C. Aurivillius, Secretary of the Royal Swedish Academy of Sciences, the editor has secured estimates from Aftonbladet for Vol. IV. of the edition *Opera de Rebus Naturalibus*, and for Professor Hjalmar Sjögren's paper on Swedenborg for Section 2 of »Emanuel Swedenborg as a Scientist». The printing will be begun presently and later will follow Vol. V. and the *Appendix* to Vol. I. as promised, namely, the editors »Chronological List» of Swedenborgiana, especially of the scientific period of Swedenborg's authorship. The full *List* will appear in the pages of the *New-Church Magazine*. In order to bring the work on the *List* and proposed *Swedenborg Archives* to a preliminary conclusion the results since 1913 have all been forwarded to England and America.

So far as the *results* of the »List» Fund are concerned, they are the following: 1) Chronological List, for the *New-Church Magazine*, 2) Hyde's Manuscripts relating to Swedenborg, for the *New-Church Quarterly*, 3) Gothenburg Copies, 4) Jönköping Copies, 5) Stockholm and Miscellaneous Copies, together with an officially certified Genealogy of the Swedenborg Family from the House of Nobles. Moreover, a large collection of articles, translations, bibliographical notes on Documents concerning Swedenborg, Prefaces for *Swedenborg Archives*, and translations of Documents by and concerning Swedenborg have been sent out to the *Quarterly*, with Hyde's MSS., to the *Magazine*, with the *List*, to *New Church Life* with Swedenborg's Correspondence, to the *New Church Review* with Documents concerning Swedenborg. All of these results, planned as matter to be reprinted in part from the periodicals as Vols. II. to V. of the *Archives*, Vol. I appearing at Stockholm, will now be supplemented by further results of the editor's investigations and labor.

In order to continue the scientific and documentary editing I have requested the American bodies at Bryn Athyn and Boston to pay my salary quarterly, as the payments from England and America, since 1914, have often been several months or quarters in arrears, causing much loss and inconvenience, and also that £ 100 each be contributed by the three centres for 1918—19, as was the case for 1913—16. The burden for the editor's support for 1916—17 was met by Bryn Athyn

alone, where I also edited Swedenborg's *Journals* while reorganizing the phototyping work from December, 1916, to August, 1917, when New York and Boston were also visited and a new effort to continue the work in Sweden gradually made headway in spite of the difficulties created by the war, and after the withdrawal of the British interests in June, 1916. I trust that the old debts for the phototyping remaining from that year will finally be wiped out, and that the editor will also be reimbursed for his expenses in issuing special publications as well as for all the losses by the exchange, by the enormous war prices, and by other causes.

In order to arouse new interest in the work in Sweden I have not only sent out numerous letters and articles appealing for support and funds, so liberally contributed in the past by Mr. John Pitcairn, Mr. David Wynter, and others, for the »List» and for special work, but have also at my own expense and risk had translated and typewritten, with numerous additions, my *Outlines of Swedenborg's Life and Philosophy*, with documents, bibliography, and numerous translations. This has been forwarded so far as Part I. is concerned, or about half of the work, up to the »Worship and Love of God» period, to the Massachusetts New Church Union.

Mr. John Pitcairn and the Convention paid for the copying of the *Pro Fide et Charitate* Records in 1912, and Mr. Pitcairn also contributed funds for an investigation of the Exegetic and Philanthrophic Society Records at Helsingfors, Finland, in 1913. I have therefore requested the Boston and British interests to pay for the copying.

The Gothenburg and Jönköping *Documents* would make Vols. VII.—VIII. of the *Archives*, and the above *Records* would make Vols. IX.—X., and Vol. VI. would be Swedenborg's *Journals* if the Academy in Bryn Athyn will consent to publish them in the *New Philosophy*.

From the above it will be seen that the editor is fully occupied with important work in spite of the cessation of the phototyping and other adverse conditions. There is every reason to continue the scientific and documentary work now, and later to proceed again with the phototyping, funds permitting.

ALFRED H. STROH.

Upsala, Sweden,
March, 1918.

Annual Report of Work in Sweden, 1917—1918.

The previous Annual Report was dated April 27th, 1917, and was sent out from Boston to the six bodies which up to the middle of the year 1916 were engaged in the work of phototyping Swedenborg's theological manuscripts, namely, in the United States of America, the General Convention of the New Jerusalem, the Academy of the New Church, the American Swedenborg Printing and Publishing Society, and the Rotch Trustees, and in England, the Swedenborg Society, and the General Conference of the New Church. A copy was also sent to the Swedenborg Scientific Association, that body being directly interested in the publication in Sweden of Swedenborg's scientific works.

After preliminary discussions in Bryn Athyn, New York and Boston, during which the editor explained verbally and in writing the status of the work in Sweden and the plans for its continuation, a number of men from the three places mentioned met at Philadelphia during Convention Week and decided informally to continue the phototyping by completing the *Miscellanea Theologica*, or Vol. XVIII of the series *Emanuelis Swedenborgii Autographa*, *Éditio Phototypica*, which was then in the binder's hands. The actions of this informal meeting, and the later progress of the work in Stockholm, have been reported to the *Messenger* by the Rev. John Whitehead and by the editor. For complete accounts of the phototyping and past results see articles contributed by the editor when in America to the *New-Church Review* and *New Church Life*. Other reviews and contributions of a critical, biographical and bibliographical nature, in preparation for the Stockholm series of Swedenborg's scientific works, for the remainder of "The Brain", and for the editor's drafted compilations entitled "Manuscripts relating to Swedenborg», by James Hyde, and the editor's "Outlines of Swedenborg's Life, Philosophy and Influence", and "Chronological List af Works and Documents by and concerning Emanuel Swedenborg", have been contributed to the American and English New Church periodicals.

The editor has superintended the phototyping of pages 451—618 of *Miscellanea Theologica*, and has also made preparations for the

continuation, but because of a lack of cash for paper the actual printing has had to be suspended until the necessary funds arrive in Sweden. Having received strict instructions to confine my work to the above theological phototyping for the six months contemplated, it is only lately, in view of the unexpected delays in the receipt of funds, that the preliminary editorial labor for the scientific and bibliographical series has been undertaken. I trust that before the close of the present financial year the necessary arrangements for further phototyping and for editing the scientific works will be provided and authorized by the bodies in charge. I am in correspondence with Messrs. E. C. Bostock and B. A. Whittemore, from whom definite instructions were received last August, and also with Professor Alfred Acton, whose keen interest and energetic propaganda for the continuation of the phototyping, and of the scientific and documentary series also, is will known in America through his detailed reports concerning this work and proposals for its continuation discussed in Bryn Athyn, New York, Boston and Philadelphia during the past year. I desire here publicly to acknowledge the help received last year in America during a time of great need, and to express my thanks to the American bodies and officials, and to the many friends, who in various ways advanced the plans for the work in Sweden during my visit in America from December, 1916, to August, 1917. In spite of these strenuous times it was decided to continue the work in Sweden and to carry out fully the original plans for *Miscellanea Theologica*. As it sometimes takes months to get a letter across the Atlantic I am sending this Annual Report in good time to Professor Acton for *The New Philosophy*, requesting him to furnish a copy in the form of advance proofsheets to the bodies mentioned in the beginning. It will be seen from the above statement that the work of phototyping is in a state of suspense. The last proofs will be forwarded this month and then the editor must wait for funds and instructions as to what to do next. In the meantime the work of editing translations of scientific matter and the biographical and bibliographical results for the New Church periodicals will be continued.

As it may be of interest historically, and even of practical value for the continuation of the work, I shall here quote some of the resolutions passed by the Swedenborg Society's official Committees from 1908 to 1913 and bearing on the plans for and conduct of the phototyping and scientific editing. The resolutions were received, together with others covering connected work of the same period, in typewritten form from the Rev. Arthur Wilde, Secretary, in the summer of 1913, as a guide for future work. They show how complete and

definite were the plans as developed from time to time, and also indicate the lines according to which the phototyping and scientific volumes should be completed. I omit here those resolutions which do not directly concern the continuation of the two lines of work in question.

Re Phototyping.

Resolved. That Dicta Probantia, being properly a Scripture index, be added to the phototype of the *Index Biblicus*, but with a separate title page bearing the distinctive title.

That communication be opened with America to secure the completion of the volume of Swedenborg's Miscellaneous Posthumous theological works begun by the Convention in 1902—3.

That the work of phototyping the theological MSS. of Swedenborg be proceeded with as circumstances permit.

That the phototyping of the following smaller theological MSS. be put in hand first: Nos. in the Bibliography 2473, 2688, 2711, 2715, 2953, 2955. etc.

That the Adversaria be proceeded with after the smaller theological works or concurrently.

That the following works be phototyped in the order that they are placed:

Arcana Coelestia and the Index to the Arcana, A. E. first draft, Index to the Apoc. Rev.

That Mr. Stroh has copies of his report typewritten in Sweden, and sent to all the societies contributing to the phototyping fund.

That Mr. Stroh's engagement continue until the work of phototyping is completed.

That Mr. Stroh's main work be the superintendence of the phototyping of Swedenborg's MSS. which should be pushed on as rapidly as good work will allow.

That the editing of the Latin issues of the scientific and philosophical works, published under the auspices of the Royal Academy of Sciences, be recognised as his secondary duty.

Resolved. That the work of phototyping the Adversaria and Miscellanea Theologica be now authorized.

In addition to the continuation of the Miscellanea Theologica submitted by Mr. Stroh, it was

Resolved. That the Theological Letters of Swedenborg be included in this volume, as suggested by the American Swedenborg Society.

Resolved. That pages 180 to 196 entitled "Varia Philosophica et Theologica" contained in the photolithographed volume called Itineraria et Philosophica be phototyped in the Miscellanea Theologica.

Resolved. That Mr. Stroh's annual report to be presented at the Annual meeting, be revised as for as necessary by the subcommittee on Phototyping.

Resolved, that all the Miscellaneous Theological Documents including original copies of lost Documents amounting to about 100 pp. over and above those already ordered to be phototyped be also phototyped and included in the volume which the Rev. I. Tansley is editing.

The following resolution was also passed:

Mr. A. H. Stroh having stated that in his opinion Swedenborg's Latin and Hebrew Bibles shouid be phototyped in one volume in order to complement the Index Biblicus and the Adversaria.

Resolved, that the Treasurer be requested to obtain from the various Societies contributing to the cost of the work in Stockholm a promise of the continuance of their contributions until the completion of the work at present in hand: and to inform them that Mr. Stroh has submitted proposals for additional work, in reference to which the Council will confer with them after Mr. Stroh's return from his proposed visit to America.

Re Scientific Works.

Resolved. That a sub-committee of five be appointed to negotiate terms with the Swedish Royal Academy of Sciences and the Swedenborg Scientific Association of America, in order to secure if possible the inclusion of a reissue of the Opera Philosophica et Mineralia; and also to arrange terms with Mr. Stroh.

Resolved. That our present order for 25 copies of the Stockholm issues be increased to 125 from Vol. IV to Vol. X provided the Opera Philosophica et Mineralia be included.

Resolved. That Mr. Stroh be asked to approach Prof. Ramström with respect to the completion of the work on the Brain in the manner of the first two volumes issued by Dr. Tafel.

Mr. Stroh, having reported that Prof. Ramström had commenced work on The Brain and was anxious to proceed,

Resolved, that the Librarian and Mr. Stroh be authorized to despatch the whole of the material for vols. 3 and 4 of the above work

prepared by the late Dr. Tafel and the Rev. James Hyde to the care of the Librarian of Upsala University, Dr. Aksel Andersson, duly insured.

Resolved, that the preparation of the typewritten copy of the Chronological List be proceeded with, subject to £100 per annum for three years necessary to cover the expenses to the Society being raised and to assurances being received that from other sources the sum of £200 per annum for three years will be contributed.

The above resolutions are quoted *verbatim*. According to further instructions voted in December, 1913, the publication of the "Chronological List" was authorized in the *New-Church Magazine*.

The unpublished results of Tafel and Hyde have been described, so far as they concern *The Brain*, Vols. III and IV, and the *Documents concerning Swedenborg*, in a contribution to the *New-Church Quarterly*, and the publication of Hyde's "Manuscripts relating to Swedenborg" has also been suggested in that periodical. The above unpublished results are now deposited in the Library of Upsala University for use by Professor Martin Ramström and the editor, and during the coming year it is hoped their ultimate publication can be prepared for.

The work in Sweden being now in charge of the American bodies, so far as the phototyping is concerned, I trust that new work and support for the editor will be authorized during the present year, and that as in the past the scientific and documentary work will be considered as being secondary but important uses to be developed as time and opportunity permit. I request funds for phototyping and salary, and authorization to proceed with the publication of the scientific works, funds permitting.

Respectfully submitted,

ALFRED H. STROH.

Upsala, Sweden, Jan. 8th, 1918.

Ways and Means for publishing Swedenborg's Scientific Texts.

A Prospectus by Alfred H. Stroh, M. A.

To the Swedenborg Scientific Association.

In the "Annual Report of Work in Sweden, 1917—1918", recently forwarded to America, the progress of the phototyping of Swedenborg's *Miscellanea Theologica* was stated as being the printing of pp. 451—618. With the completion of this volume, eighteen of the proposed twenty-five will have been printed in the series *Emanuelis Swedenborgii Autographa, Editio Phototypica.* Vols. XIX to XXV, proposed for publication, will contain Swedenborg's remaining unreproduced MSS., of scientific, philosophical and miscellaneous content. These proposed seven, volumes will be of very great value to the students and editors of Swedenborg's texts.

The movements in England and America to publish selected volumes of Swedenborg's scientific and philosophical works in the original Latin and in English translations have also been connected with definite plans to publish a complete series of those works. I have before me a rare "Prospectus" entitled "The Scientific and Philosophical Works of Emanuel Swedenborg", by T. H. Carter & Son, 21 Bromfield Street, Boston, 1866, followed by R. L. Tafel's "Ten Reasons for publishing a complete American edition of Swedenborg's philosophical and scientific writings". And in London the Swedenborg Society has definitely authorized the preparation for press of an English translation of Vol. I of the Stockholm texts published under the auspices of the Royal Swedish Academy of Sciences, entitled *Emanuel Swedenborg, Opera de Rebus Naturalibus.*

The Stockholm *Opera*, of which volumes I to III appeared in 1907, 1908 and 1911, will include many additional volumes covering the whole period of Swedenborg's scientific labors from 1710 to 1745. Vol. IV is printed so far as the *Daedalus Hyperboreus* is concerned, or over 150 pages, and the remainder of the volume will contain the other early scientific papers of Swedenborg still unpublished in the series up to the *Principia* period. The editor is now at work preparing for press the Introduction by Professor N. C. Dunér, late

Perpetual Secretary of the Royal Society of Sciences of Upsala, and the remainder of the text and the editorial notes. The money to print this volume lies ready to be used as there is a Swedenborg Fund of over 4,000 kronor in the hands of the Treasurer of the Royal Swedish Academy of Sciences.

In order to give some idea of the immediate plans for the next volumes of this fundamental series of texts I may quote two resolutions passed by the London Swedenborg Society's Committee on June 10th, 1908:

Resolved. That a sub-committee of five be appointed to negotiate terms with the Swedish Royal Academy of Sciences and the Swedenborg Scientific Association of America, in order to secure if possible the inclusion of a reissue of the Opera Philosophica et Mineralia; and also to arrange terms with Mr. Stroh.

Resolved. That our present order for 25 copies of the Stockholm issues be increased to 125 from Vol. IV to Vol. X provided the Opera Philosophica et Mineralia be included.

As soon as Vol. IV is off the press the editor will send out a printed *Prospectus* giving details as to price, and also definite proposals as to subscriptions for Vols. V—VII, to contain the *Opera Philosophica et Mineralia* in a photographic reproduction, as this plan has met with favour in Sweden, England and America. These three volumes should not only be included in the series, but also issued separately in a large edition for distribution to libraries and scholars.

In order to raise the question of collecting special subscriptions for the inclusion of the *Opera Philosophica et Mineralia* I send this Communication to the Swedenborg Scientific Association, requesting its consideration.

The phototyping work when continued need not interfere with the scientific and documentary work, and I now request editorial support for the remainder of this financial year during which I am engaged in publishing the scientific and bibliographical materials while awaiting further instructions from America as to the continuation of the phototyping.

Respectfully submitted,

ALFRED H. STROH.

Upsala, Sweden, January, 1918.

Resolutions of the London Swedenborg Society, 1908—1913, on Work in Sweden.

June 10/08.

Resolved. That a sub-committee of five be appointed to negotiate terms with the Swedish Royal Academy of Sciences and the Swedenborg Scientific Association of America, in order to secure if possible the inclusion of a reissue of the Opera Philosophica et Mineralia; and also to arrange terms with Mr. Stroh.

Resolved. That our present order for 25 copies of the Stockholm issues be increased to 125 from Vol. IV to Vol. X provided the Opera Philosophica et Mineralia be included.

Resolved. That the question of inviting Mr. Stroh to translate the Swedish contained in *Geologica* (with such assistance as he may find necessary) be referred to the above sub-committee.

Resolved. That the Rev. J. Deans, Mr. Gardiner, Mr. Higham, Mr. Spalding and Mr. Speirs be such sub-committee, Mr. Speirs secretary.

Resolved. That the question of a general policy for continuing the phototyping and of cooperation with America in a general scheme be considered by sub-committee.

Resolved. That Mr. Stroh be asked to furnish an exhaustive report on Swedenborg's letters, documents, etc. such reports to be referred to the above sub-committee.

Resolved. That Dicta Probantia, being properly a Scripture index, be added to the phototype of the *Index Biblicus*, but with a separate title page bearing the distinctive title.

Oct. 2nd/08.

Resolved. That Mr. A. H. Stroh be appointed to translate (with such assistance as he may find necessary) the Swedish portions of

Geologica et Epistolae, the translation to be paid for at the rate of 2/6 per page of the Stockholm edition.

Resolved that the sum of £25 be paid to Mr. Stroh for his services in providing the "copy" and illustrations for the Swedenborg Memorial Volume.

That the consideration of remuneration for the full report on MSS. documents, letters, and other Swedenborgiana be postponed until receipt of the report.

Mr. Stroh reported that he had failed to come to any arrangement with the Rev. J. Hyde respecting the documents and the information about documents which Mr. Hyde possesses.

Resolved. That Mr. Stroh be at liberty to examine and copy any of the documents which are contained in the Society's Library.

Resolved. That the Society agrees to contribute towards the support of Mr. Stroh in the execution of the work in Stockholm the sum of £80 (400 kronor) and £20 (100 kronor) extra for travelling expenses for purposes of research, provided the American Convention and the Swedenborg Scientific Association will each of them undertake to contribute the sum of 400 kronor towards Mr. Stroh's support per annum.

A report, dated Sept. 28th, was read from Mr. Stroh, respecting the Index Biblicus, the report on MSS. and Documents, and the Swedenborg Memorial Volume. He also referred to the Swedenborg Sarcophagus, and to his delivery of two lectures at the International Congress of Philosophy at Heidelberg as representative of Upsala University on the nebular hypotheses of Swedenborg and Descartes. He had undertaken the visit on the advice of Mr. Gardiner who was asked to arrange for the payment of a portion of his expenses.

Nov. 6th/08.

Resolved. That the sum of £15 being Mr. Stroh's expenses in visiting Heidelberg (together with a fee) and delivering two addresses on Swedenborg and Cartesian philosophy, be granted to Mr. Stroh.

Resolved. That after the publication of Mr. Stroh's addresses in the Transactions of the International Congress on Philosophy, their separate publication be considered.

Dec. 4th/08.

The Committee having learned from a letter from the Rev. Dr. Sewall that the American Societies have voted 1,000 kronor for the current year.

Resolved. That the Treasurer be instructed to pay to Mr. Stroh sufficient to bring up his income for the current year to 1,200 kronor and in addition the sum of £20 for travelling expenses.

Apr. 2/09.

A report was read from Mr. Stroh about the motion to appropriate 10,000 kronor of the public funds towards the Swedenborg sarcophagus and the opposition of a portion of the press. Also of his having written a pamphlet for wide distribution embodying the favourable opinions of men of all countries concerning his scientific discoveries and philosophical conclusions.

Resolved. That the terms of the engagement with Mr. Stroh be referred to the two American Institutions which are at present his ostensible employers.

June 25/09.

Mr. Stroh who had prepared a precis of the work of the past year and of the work of the coming year, went through the items supplementing each point with full details. Arising therefrom the following were adopted:

That the Swedenborg Memorial Volume be issued in the early spring of 1910, and that Mr. Stroh be requested to furnish the complete MS. at the beginning of October.

That Mr. Spalding and Mr. Speirs be appointed a sub-committee to arrange for its publication.

That a preface in Latin appear in each of the three vols of the Index Biblicus.

That communication be opened with America to secure the completion of the volume of Swedenborg's Miscellaneous Posthumous theological works begun by the Convention in 1902—3.

July 2nd/09.

Resolved. That the Treasurer be authorised to remit £25 to Mr. Stroh, being a further quarterly payment to Oct. 1st; and that the question of the continued engagement of Mr. Stroh be referred to the Documents and Stockholm sub-committee.

Jan. 27/10.

Resolved. That the terms of Mr. Stroh's engagement be discussed with the representatives of the various American institutions which contribute towards his salary; and that the Correspondence Sub-committee on Non-Congress business intimate the fact to the American bodies interested in the matter.

May 13/10.

That the programme of work to be undertaken by Mr Stroh (in addition to the editing of the Stockholm issues) be arranged for, together with the order in which the remaining MSS. of Swedenborg necessary to be phototyped shall be undertaken; and the proportion determined in which the American Convention, the Swedenborg Scientific Association (for the Scientific and Philosophical Works) the Academy of the New Church and this Society shall bear the costs.

That the terms of Mr. Stroh's engagement be considered and the amount of his salary, together with the proportion in which the various interested institutions shall contribute to it.

That a Conference take place between the Committee of the Swedenborg Society and the representatives from the American Institutions at Bloomsbury Street on the Monday following the Congress at 10.30 a. m.

[It lasted about 5 hours.]

July 11/10.

The following motions were adopted:

(c) The publication of the works in Foreign languages.

That in case one of the Societies has special advantages in some foreign field, as having at command a competent translator, an efficient publisher, and supervision by some trustworthy agent on the spot, it be recognised as a governing principle that either:

a. The said field be left to the Society possessing the advantages above stated, or

b. That the same means of production and distribution be employed by the other Society that may by mutual arrangement commence operations in the same field.

That the work of phototyping the theological MSS. of Swedenborg be proceeded with as circumstances permit.

That the phototyping of the following smaller theological MSS. be put in hand first: Nos. in the Bibliography 2473, 2688, 2711, 2715, 2953, 2955. etc.

That the Adversaria be proceeded with after the smaller theological works or concurrently.

That the following works be phototyped in the order that they are placed:

Arcana Coelestia and the Index to the Arcana, A. E. first draft, Index to the Apoc. Rev.

That it be a recommendation from this meeting to all the Societies represented and to the Rotch and the Jungerich Trustees that they cooperate in raising the sum of £800 a year for not less than five years, so that the work of phototyping may proceed and be completed with the utmost expedition; the books produced to be divided among the subscribers in proportion to their subscriptions.

That the edition be 110 copies.

That the initiative in the issue of further Latin editions of the theological writings be left to the Amer. Swed. Ptg & Pub. Society.

That the salary of Mr. Stroh for the present be at the rate of £360 per annum, of which the Swedenborg Society of London undertakes to contribute £120, the Academy of the New Church £120, the American Convention £100, and the American Swed. Ptg & Pub. Soc. £20.

That Mr. Stroh has copies of his report typewritten in Sweden, and sent to all the societies contributing to the phototyping fund.

That Mr. Stroh's engagement continue until the work of phototyping is completed.

That the salary of Mr. Stroh be paid by the Treasurer of the Swedenborg Society, and that he be authorised to apply to the various contributing institutions for their quota.

April 7/11.

The sub-committee on Mr. Stroh's duties presented their report. As amended by the committee they are as follows:

1. That Mr. Stroh report, on a form to be drawn up, the work done during the month in time to be laid before the Committee at its meeting on the first Friday in each month.

2. That Mr. Stroh also send a copy of this report to the Convention's Committee on phototyping the MSS., the Academy of the New Church, and the Rotch Trustees.

3. That Mr. Stroh's main work be the superintendence of the phototyping of Swedenborg's MSS. which should be pushed on as rapidly as good work will allow.

4. That the editing of the Latin issues of the scientific and philosophical works, published under the auspices of the Royal Academy of Sciences, be recognised as his secondary duty.

5. That the translation of the Swedish works of Swedenborg be also undertaken by him, when sanctioned by this Committee.

6. That he undertake such other work as this committee may from time to time direct, that as he, residing in Sweden, may see reason for undertaking other work, that he in such cases be invited to suggest it to the Committee; but that such work must be authorized and adopted by this Committee before it can be undertaken.

7. That no work whatever shall be undertaken before it has been duly authorised in writing by the Committee of this Society, acting for itself, and the other bodies contributing to his salary and the cost of the phototyping of the MSS.

Resolved. That on Mr. Stroh's arrival a special meeting of the Committee be called to meet and confer with him.

May 5th/11.

After considering the amounts promised at the present time by American Institutions viz. The Convention's Committee £200, the Academy of the New Church £200, and the Rotch Trustees £50 per annum, which with the Society's contribution of £200 per ann. make a total of £650 per ann. it was

Resolved. That the amount of phototyping carried out by Mr. Stroh be limited to the sum of £650 per ann.

Resolved. That as each account for phototyping in received by this Committee the Treasurer apply to each of the other Institutions to pay their grants.

Resolved. That application be now made for the quota of the bill received amounting to 2,600 kr.

Resolved. That the work of phototyking the Adversaria and Miscellanea Theologica be now authorised.

Resolved. That Mr. Stroh be requested to examine all the MSS. scheduled at the Conference with the American representatives in July 1910 for phototyping, and report the number of sheets, and having regard to their condition form an approximate estimate of the time required to finish the work.

The list of Mr. Stroh's duties was read, and the last clause of No. 6 it was agreed to omit Mr. Stroh to whom they entirely knew wished for time to consider them.

Resolved. That Mr. Stroh be asked to approach Prof. Ramström with respect to the completion of the work on the Brain in the manner of the first two volumes issued by Dr. Tafel.

Resolved. That a further meeting with Mr. Stroh is desirable after Mr. Stroh has examined the MSS. of Rev. Jas Hyde. The date of such meeting to be determined by the Chairman and Secretary.

July 7th/11.

A letter was read from Rev. J. C. Ager, chairman of the Convention Committee on Phototyping the MSS. which stated that the Convention had at Chicago voted 1,000 (one thousand dollars) a year for four years towards the phototyping work, and the usual annual sum of 500 (five hundred dollars) towards Mr. Stroh's salary.

May 3rd/11.

Mr. Stroh's report dated April 15th, not having contained a note of the work done during the month, had been returned to him for correction. He amended it by stating that the Adversaria pages 251 to 304 had been executed during the month ended April 15th.

In addition to the continuation of the Miscellanea Theologica submitted by Mr. Stroh, it was

Resolved. That the Theological Letters of Swedenborg be included in this volume, as suggested by the American Swedenborg Society.

Resolved. That pages 180 to 196 entitled "Varia Philosophica et Theologica" contained in the photolithographed volume called Itineraria et Philosophica be phototyped in the Miscellanea Theologica.

Resolved. That Mr. Stroh's annual report to be presented at the Annual meeting, be revised as far as necessary by the sub-committee on Phototyping.

Council Meeting held on June 30th 1913.

[The Committee and Council Meeting lasted $3^{1}/_{2}$ hours; from 5—7 and 7—$8,_{30}$ P. M.]

Mr. J. Howard Spalding was appointed as Chairman.

Present:

Mr. Black.
Rev. Joseph Deans.
Mr. Gardiner.
Mr. Gilbey.
Mr. Brayley Hodgetts.
Rev. W. A. Presland.
Rev. I. Tansley B. A.
Rev. A. Wilde.
Mr. Wynter.

Mr. A. H. Stroh also attended.

The Report of the Stroh Committee, a meeting of which was held immediately before the Council Meeting, was read and adopted in the following form:

1. *Resolved*, that the sum of 100 Kr. paid to Mr. Hugo Odhner by Mr. Stroh, and the sum of 150 Kr. due from Mr. Stroh to Miss Odhner for translations made in pursuance of a resolution respecting the preparation of Vol. I. of "Opera Quaedam" passed Oct. 2nd 1908, be paid to Mr. Stroh.

2. Mr. Speirs having sent to Mr. Stroh on April 23rd 1912 an order to procure for the Society an unspecified number of *Lantern Slides.*

   Resolved, that Mr. Stroh be paid for 150 slides on delivery at the rate of 2.00 Kr. each, plus the expenses of photographing some of them, packing, freight and insurance.

3. *Resolved*, that Swedenborg's own title to "Adversaria" namely "Explicationes in Verbum" with the addition as a subtitle of the words "Seu Adversaria" be adopted as the title of the phototyped edition, and that Mr. Stroh be authorized after consultation with the Rev. I. Tansley and Dr. Aksel Andersson, to print the title pages and prefaces to "Index Biblicus" and the above mentioned work.

4. *Resolved*, that all the Miscellaneous Theological Documents including original copies of lost Documents amounting to about 100 pp. over and above those already ordered to be phototyped be also

phototyped and included in the volume which the Rev. I. Tansley is editing.

5. Mr. Stroh, having reported that Dr. Ramström had commenced work on the Brain and was anxious to proceed,

Resolved, that the Librarian and Mr. Stroh be authorized to despatch the whole of the material for Vols. 3 and 4 of the above work prepared by the late Dr. Tafel and the Rev. James Hyde to the care of the Librarian of Upsala University, Dr. Aksel Andersson, duly insured.

6. *Resolved*, that the preparation of the typewritten copy of the Chronological List be proceeded with, subject to £ 100 per annum for three years necessary to cover the expenses to the Society being raised and to assurances being received that from other sources the sum of £ 200 per annum for three years will be contributed.

7. *Resolved*, that Mr. Stroh be authorized to ascertain how many of the contributors to the Congress Transactions desire to have separate prints of their papers, and that any number required be supplied to them when the book is reprinted, the opening addresses being all printed in one section.

8. *Resolved*, that measures be taken to ascertain from public Libraries and other Institutions and from Scientific men whether the presentation to them of the volumes of "Opera Quaedam" would be acceptable.

9. *Resolved*, that a copy of the Transactions be presented to all members of the present Swedish Parliament who have not received one.

10. *Resolved*, that a copy of the Transactions be presented to all the Professors and Docents of Helsingfors University.

11. The following resolution was also passed: —

Mr. A. H. Stroh having stated that in his opinion Swedenborg's Latin and Hebrew Bibles should be phototyped in one volume in order to complement the Index Biblicus and the Adversaria.

Resolved, that the Treasurer be requested to obtain from the various Societies contributing to the cost of the work in Stockholm a promise of the continuance of their contributions until the completion of the work at present in hand: and to inform

them that Mr. Stroh has submitted proposals for additional work, in reference to which the Council will confer with them after Mr. Stroh's return from his proposed visit to America.

12. *Resolved*, that subject to confirmation at the next meeting of the Council, and on condition that the Academy of the New Church and the General Convention increase their contributions, the Council increase its contribution to the work of phototyping by £ 50 per annum.

13. Mr. Gardiner having reported that Professor Ramström is to lecture on the Brain at the Medical Congress to be held in London in the early part of August,

Resolved, that Messrs F. A. Gardiner, J. H. Spalding, D. Wynter, and A. Wilde be a committee to make arrangements to entertain Professor Ramström on the occasion of his visit.

[It was also voted to buy at cost price from A. H. Stroh 100 copies of Ramström's *Investigations* at kr. 2.50 per copy + shipping expenses.].

Proposed reorganisation of the Work in Sweden.

The breaking down of all plans to continue the phototyping of Swedenborg's MSS. has given the editor time for some months to go to press with Vol. IV. of the scientific texts, being the *Daedalus Hyperboreus*, done in *facsimile* in 1910, in 154 pages, and other early physical papers by Swedenborg before the *Principia*. Simultaneously the little biography *Outlines of Swedenborg's Life*, Stockholm, 1908, has been edited in extended form for publication at Boston, and numerous bibliographical and documentary results have been forwarded to the British and American New Church periodicals as Vols. II. to V. of the proposed *Swedenborg Archives*, Vol. I. being in press at Stockholm and about to appear.

It has always been a perplexing problem how to publish the original documents collected by Dr. R. L. Tafel, the Rev. C. Th. Odhner, and the Rev. James Hyde, especially now that their Collections are being typewritten and entered in the *Chronological List*, together with numerous other accessions in Sweden from 1902 to 1918. This enormous and expensive labor, resulting in a series of volumes in typewritten form worth at least £ 2,000, ought to be printed not only in translated

form, but also in the original Swedish and Latin. Most of the material is in Swedish, some is in Latin, and a little in English, German, French, Russian, etc.

After prolonged discussions with the editors of the Scandinavian New Church periodicals, and with publishers in Stockholm and Upsala, I have finally found a good solution, provided some financial assistance can be secured from England and America. For the purpose of typewriting the important Records of the Exegetic and Philanthropic Society, etc., and for other scientific and documentary typewriting, I have recently requested £ 100 each from London and Boston, the late Mr. John Pitcairn having in March, 1913, contributed $ 500 for the purpose of investigating these Records in Finland. A detailed list of the interesting evidence has been typewritten and forwarded for publication to England and America.

I now suggest that a joint Committee in England and America appointed by such bodies as may be interested in this use, contract with the Stockholm publishing firm Björck & Börjesson for the printing of the original documents, in chronological order, and that some of the most important Swedish documents be also issued as an *Appendix* to a large biography of Swedenborg to be published by the New Church Book Company of Stockholm and Björck & Börjesson. If the periodicals are subsidized they can print sheets of such size that finally the volumes can be bound up in a style uniform with *The Swedenborg Archives*, ten volumes of which have been edited and planned hitherto.

In spite of all the exasperating delays in connection with the phototyping since 1915, due to financial inability and lack of cash on hand, and resulting in a large debt which is today payable only with a great loss by the course of exchange, and in spite of the lack of salary for the editor and of funds for secretarial and typewriting work, so liberally supplied in 1913, I have now succeeded, after personal visits to England and America during the war, in continuing not only the phototyping, but also the scientific series and documentary researches. This has only been possible at considerable personal loss, and even today, nearly two years after the retirement of the London Swedenborg Society from the management of the work in Sweden, the American bodies have not succeeded in reorganizing the work as a whole.

Taking a general view of the field, the phototyping, which might easily have been reorganized in 1915, and even in 1916, if the plans of the editor or of Professor Acton had been favourably considered and acted upon in time, must now come to a standstill due to a lack of a

contract for paper, although the editor strenuously advocated that over two years ago. The scientific series can go on, for there is sufficient paper, but will the foreign subscriptions be forthcoming after Vol. IV. has appeared next summer?

But even supposing that the lack of contracts for the phototyping and scientific series which the editor has for years endeavoured to secure as a safeguard for the work in Sweden, has now very nearly ruiued that work, there is a third line on which we may advance. The bibliographical and documentary work so liberally supported by Mr. John Pitcairn, Professor Gustaf Retzius, and Mr. David Wynter, since 1902, represents an investment of over £ 2,000, and the results have been typewritten in six sets of five folio volumes and destributed.

These and other old and new documentary results ought to be published as soon as possible while everything is still in hand. That is selfevident. If so, why not issue them *now*, returning in the form of books the capital hitherto invested? The subscribers to the two Scandinavian periodicals and to my large *Outlines*, as well as book-buyers generally in Scandinavia, will supply some of the money to pay for the proposed books, if the foreign bodies will begin by subsidizing the work for one year. I am without salary for the past half year, but am still working in this field with excellent success. Will the British interests which have invested one quarter of the capital, and the American bodies, which have invested nearly threequarters of the £ 2,000, cooperate?

Respectfully submitted,

ALFRED H. STROH.

Upsala, Sweden,
April 15, 1918.

Quarterly Report of Work in Sweden, for the quarter closing March 31st, 1918.

Phototyping: Pages 451—618 of *Miscellanea Theologica* printed. Photographing in progress and negatives being collected from America and Europe. Statements sent as follows:

1917.	31 Dec.	*Miscellanea Theologica*, pp. 451—618, kr. 2,130: 75. Janitor Wortzelius, turning leaves of above 34: 20.
1918.	31 March.	Phototyping of *Miscellanea Theologica* 462: 56.

No paper being obtainable, and the photographing practically finished except for a few MSS., partly from abroad, the Editor recommends the photographing of next volume of series, Vol. XIX., 86 pages having been done in 1910 as *Swedenborgiana*, Part I., recently bought from Nykyrkliga Bokförlaget for cost price, kr. 550.

The editor's instructions from America for six months were to confine work to phototyping of *Miscellanea Theologica*. No paper being obtainable the other two lines of work, in hand since 1902, have been continued this quarter as follows:

Scientific Works: 154 pages of Stockholm *Opera*, Vol. IV., printed 1910, *Daedalus Hyperboreus*, forwarded to Editor of *New Philosophy*, Professor Alfred Acton, as specimen.

Negotiations with Secretary of Royal Swedish Academy of Sciences, and with "Aftonbladet", have resulted in estimates for remainder of Vol. IV., for "Emanuel Swedenborg as a Scientist", Vol. I., Section 2, a paper by Professor Sjögren, and for *Appendix* to Vol. I. of *Opera*, being the editor's "Chronological List" of Swedenborgiana.

List of subscribers in America to *Opera* copied on behalf of Swedenborg Scientific Association for *New Philosophy*.

The editor's Annual Report and Prospectus sent to *New Philosophy*, January, explains plans and prospects.

Swedenborg Archives: Vol. I. in progress. Part I., printed by Norstedt & Söner, Stockholm, 1912, 71 pages, will be amplified by further Reports and Documents *re* Work in Sweden, Part II. being in press. Other Parts of Vol. I. will follow, including reprints from Stockholm *Opera* presented to Editor.

Vol. II., Hyde's "MSS. relating to Swedenborg", forwarded, with Preface, to Editor of *New-Church Quarterly*, London.

Vol. III., the Editor's "Chronological List", forwarded with Preface, to Editor of *New-Church Magazine*, Accrington, together with a set of Copies of Documents.

Vol. IV., "Documents by Swedenborg", including Swedenborg's Correspondence, forwarded in part, with Preface, to Editor of *New Church Life*, Bryn Athyn, Pennsylvania.

Vol. V., "Documents concerning Swedenborg", forwarded, with Preface, to Editor of *New-Church Review*, Cambridge, Massachusetts.

Vol. VI., Swedenborg's *Journals*, revised in Bryn Athyn, 1917, amplified by copy of drafted Index.

Vols. VII.—X., early Swedenborgian Documents, three volumes previously copied, and copying of fourth arranged for in Helsingfors, Fin-

land, at expense of late Mr. John Pitcairn, March, 1913. The other two-thirds of expenses, £200, requested from Convention and Conference sources.

Besides numerous secondary *results* of the "List" Fund, accounted for in *Archives*, Part II., the following 5 stout folio volumes, typewritten in 6 copies, have been forwarded, 1913—1918, to Bryn Athyn, Cambridge, London, and Accrington: 1) List, 2) Hyde's MSS., 3) Gothenburg Copies, 4) Jönköping Copies, 5) Stockholm and Miscellaneous Copies, including certified Genealogy of Swedenborg Family from House of Nobles. — Besides above Vols. II.—V. of *Archives*, numerous translations, articles, bibliographies, and reviews have been forwarded to *New-Church Magazine*, *New-Church Quarterly*, and other British, American and Scandinavian periodicals of the New Church, the intention being to call emphatic attention to the work in Sweden and to record results.

Part I. of Editor's *Outlines of Swedenborg's Life and Philosophy*, with documents and illustrations, forwarded to Massachusetts New Church Union, and Parts II. and III. in progress.

The editor's salary, continually in arrears since 1914, payment from England and America having been highly irregular, is now again half a year in arrears. Urgent letters have been sent to Bryn Athyn and Boston requesting prompt quarterly payments as before the war.

ALFRED H. STROH.

Quarterly Report of Work in Sweden, for the quarter closing June 30th, 1918.

Phototyping: A statement dated April 27th, 1918, from New Church Book Co., Kammakaregatan 50, Stockholm, for proposed beginning of Vol. XIX., pp. 1—86, of Phototyped MSS., *Swedenborgiana*, Pars I., Holmiae, 1910, has been forwarded to America . . . . Kr. 550: —. April 10th, Cablegram regnesting instructions and funds » 39: 15.

A cablegram from the Academy of the New Church, Bryn Athyn, Pennsylvania, stating that the Board suspends the work during the war has been followed by a cessation of further photographing previously proposed and contemplated.

Scientific Works: The continuation of the Stockholm *Opera*, Vol. IV., in press. A printed prospectus of the series, giving the price of

Vols. I. to IV., will be distributed to the subscribers when Vol. IV. is printed.

Swedenborg Archives: Vol. I. of this series has been edited and is about to be published.

Tafel's and Hyde's unpublished Collections for the work on *The Brain*, Vols. III. and IV., and for the *Documents concerning Swedenborg*, deposited in Swedish libraries by the London Swedenborg Society in 1913 for editorial preparation, have been listed in an extended article for the *New-Church Quarterly*, London, and will be entered bibliographically in the editor's *Chronological List.* The scientific portions of the *List* will be issued in the Appendices to the Stockholm *Opera*, Vol. I., and to the *Swedenborg Archives*, Vol. I., as a reprint.

The following memorial to the Council of the Swedenborg Society has proposed the final editing and publication of *The Brain* and *Documents*.

Jernbrogatan 10 A, n. b.,
Upsala, Sweden, April 9th, 1918.

The Council of the Swedenborg Society,
London, England.

Dear Sirs:

After recent correspondence with your Secretary and Treasurer, and also with the editor of the *Magazine* and with Mr. D. Wynter *re* my "Swedenborg Archives", I venture to approach you with the following proposal to prepare for press the unpublished collections of Tafel and Hyde for Vols. III. and IV. of "The Brain" and for the "Documents concerning Swedenborg".

The phototyping having come to a standstill from lack of paper I am continuing the photographing here and abroad this quarter. But there must be more tangible results than that to show of work in Sweden in my next *Quarterly Report.* Having therefore sent out to the periodicals the bibliographical and documentary results, etc., made under the Chronological List Fund, 1913—1918, and my *Outlines of Swedenborg's Life and Philosophy* to my publishers in Boston and Stockholm, I have now begun in the University Library here on "The Brain" and "Documents" as forwarded in 1913 for use by Professor Ramström and myself.

Will you authorize me to typewrite here or in London (if you desire to risk the loss of the MSS. on the way over) the Latin, English, and

Swedish results for these intended works? That is the preliminary step recommended[1] by Professor Ramström and myself after our consultation with your Secretary in September, 1916.

I write thus early before the Annual Meetings of the Swedenborg Society and Conference with my plea for £ 100 for 1918—19 in order to typewrite early historical documents in Finland and also the Tafel and Hyde results here. I have requested £ 200 in Bryn Athyn and Boston for documentary work. The previous results are worth at least £ 2,000, and now I propose to you to let me go on with the editing in periodicals and finally for book form of these extraordinary and completed results. I am the more inclined to push this work to a conclusion as I have not received my salary for the past half year, nor any further instructions from America, although they are either on the way or will be sent after the Annual Meetings.[1] In the meantime I am in the greatest need and everything must be done on borrowed money.

Requesting a speedy and favourable consideration of this my new proposal to rescue the work in Sweden from ruin, I remain,

Your faithful servant,

ALFRED H. STROH.

A Retrospect of the Work in Sweden.

Begun in 1902, and continued uninterruptedly until 1918, the work in Sweden has been organized and reported on annually under three heads: 1) Phototyping, 2) Scientific Works, and 3) Archives. Besides numerous special publications three great series have been edited and partly issued, namely, the phototyped *Autographa*, the scientific *Opera*, and the documentary *Archives*. The story of these three lines of work and publications has been told in the long series of Reports on Investigations in Sweden from 1902 to 1918 printed in Parts I. and II. of these *Archives*. Other results, textual, critical, bibliographical, will be appended, thus forming Vol. I. of the series, of which additional volumes have been edited for publication in the British and American New Church periodicals.

[1] On April 23rd there arrived a cablegram from America suspending the work during the war. This was in reply to a cablegram from the editor requesting instructions and funds. A recent cablegram from England also states that as in 1916 no money is available.

The progress hitherto recorded since 1902 in the investigation and printing of Swedenborgiana has been so great that there is every reason for continuing the work, even if the lack of paper at the present time will prevent the continuation of the *Autographa* beyond Vol. XVIII., and of the *Opera* beyond Vol. IV., about to appear, There is no reason why the editing of all three series for press, and especially of the *Archives*, should not proceed, except the almost complete lack of funds. After having invested large sums for many years in these series the British Societies have withdrawn from further expenses for them during the war, while the American Societies, which originally supported the phototyping in 1902, have suffered the work in Sweden to fall behind by making no appropriations. Confronted by these conditions the editor has sent out numerous appeals to England and America since 1915 and has personally visited all those concerned in the work. While there exist elaborate plans for future work after the war the only solution at the present time has been to issue on the basis of Swedish funds and private resources such books as can be published, thus exhausting the remaining opportunities left untouched hitherto.

The first volume to appear is Vol. I. of "The Swedenborg Archives"; the second will be Vol. IV. of the *Opera de Rebus Naturalibus*, now in press; the third and fourth will very likely be issued by Stockholm publishing houses as *Outlines* of Swedenborg's Life, Philosophy and Influence, being a new illustrated biography, and a new edition of Swedenborg's *Drömmar*, or Journal for 1743—44, with notes and a commentary. These volumes will probably exhaust the opportunities in Sweden, and the continuation of the work, if it is to be continued at present during the war, will depend on foreign subscriptions as in the past since 1902.

Although the Swedenborg Scientific Association, and the editor acting as the Association's representative abroad, have made urgent appeals for help during the past year, all efforts to obtain financial assistance have remained unheeded. As I now lay down my pen I feel impelled to record the fact that even although the phototyping debts, for printing and binding, remain unpaid, the condition of this series need not in any way prevent the others from being actively continued. The old leaders of the movement in America, England and Sweden, had fully resolved upon the continuation of the scientific and documentary work after the phototyping should be completed, so that the editor has prepared himself for years to carry out that intention according to the plans of the departed friends Carl Theophilus Odhner, John Pitcairn and James Speirs. If these plans and intentions now fail

of execution it will be solely because the funds are not provided, but as this would be unfair to the editor, who has given up everything in order to specialize in this field, and unfaithful to the memory of those departed leaders who promised that these uses should be continued by the British and American Societies, I appeal to them not to forget the work in Sweden and to carry out the spirit and intention of their resolutions concerning that work.

ALFRED H. STROH.

Upsala, Sweden,
June, 1918.

A Special Report to the Academy of the New Church on Unfinished Business in Sweden.

Right Reverend N. D. Pendleton,
President of the Academy of the New Church,
Bryn Athyn, Pennsylvania, U. S. A.

Dear Sir:

After a long silence I have recently received from the new Treasurer of the Academy, Mr. Leonard Gyllenhaal, a letter dated April 11th, 1918, received here May 22nd, in which he expresses the hope that I "have found some other means of making a living", and explaining that the Academy "had to stop the work in Sweden for the duration of the war". The former Treasurer, Mr. Edward C. Bostock, to whom I have sent since December a number of letters, enclosing accounts, has not replied, and I am therefore repeating the accounts in letters to the new Treasurer.

My previous experiences with the Academy have not led me to expect the breaking off of the relations which have existed practically without interruption since the year 1894. Permit me to recall a few facts to your memory concerning my connection with the Academy I was accepted as a student in 1894, granted a stipend from that year until 1902, when I was graduated and sent the following day to Sweden as the special agent of the Treasurer of the Academy. Later the General Convention also began to employ me, and in 1904 the Swedenborg Scientific Association appointed me its representative

abroad. I was employed by the Academy as a teacher from 1903 to 1905, and with the consent of the President accepted a fellowship at the University of Pennsylvania, being graduated in 1906, and then sent back to Sweden permanently after a second visit in 1905. The second and third missions were arranged for by the Treasurer of the Academy. Both Mr. Carl Hjalmar Asplundh and the Rev. Charles E. Doering, the two Treasurers referred to, were also Treasurers of the Swedenborg Scientific Association. They were always the real business leaders in the work on which I was sent to Sweden, the Convention cooperating, chiefly because of the lifelong sympathy and energetic actions of Dr. Frank Sewall, President of the Swedenborg Scientific Association. Later the chief leaders were Mr. John Pitcairn and Mr. James Speirs. This was after the Swedenborg Society of London began to cooperate in 1908. When Mr. Speirs, Dr. Sewall, and Mr. Pitcairn died, the work in Sweden was in great danger until you and Mr. Raymond Pitcairn came to the rescue in 1916—17.

Before proceeding to the discussion of the new arrangements made in 1917 in America, I desire to record that Mr. Speirs, while the phototyping was in progress after 1910, when all the Societies began to cooperate, promised on behalf of the Swedenborg Society that I need never fear that after the completion of the phototyping the Society would fail to employ me on the scientific works and "Documents". The way in which the London Society has broken its promises and resolutions, pressed by debts and the conditions produced by the war, may be studied in Vol. I. of "The Swedenborg Archives", Stockholm, 1918, a copy of which will be sent to the Academy's Library. Whether Dr. Sewall ever contemplated that the Convention would give up the work in Sweden I do not know. I believe he would as President of the Association have been grieved to see the way the Convention and Academy have treated the Memorial of 1917. Dr. Sewall's successor, Professor Lewis F. Hite, has done everything that can be done officially during 1917 to 1918, but the bodies refuse to listen. In 1912—13, when Mr. John Pitcairn was in Europe and we travelled together for weeks, he promised on behalf of the Academy of the New Church to have the phototyping continued after the 1910 series was finished, and also that the Academy would subscribe its proportion to the Chronological List Fund, both of which promises have been kept, but only in part, by the Academy.

Mr. John Pitcairn's offer through you in 1916 was an invitation for one year for myself and family to Bryn Athyn, and the purpose was to readjust the work in Sweden. After Mr. Pitcairn's death the Estate reduced the offer by three quarters and refused in writing to have

anything more to do with my work. I then appealed to you in writing, and the Academy of the New Church paid the difference, so that my salary was paid for 1916—17 after much pressure, as it had been for 1915—16 by the London Society the previous year, in both cases after long delays.

With the most admirable energy and ability the Rev. Alfred Acton reported during 1916—17 on the work in Sweden. His last report was as Chairman of a Committee appointed by the President of the Academy, in January, 1917, and composed of Professor Acton, Treasurer Bostock, and Editor Stroh. The war intervened, but nevertheless the work in Sweden was continued as a result of a second report by Mr. Acton, this time presented as a Memorial of the Swedenborg Scientific Association, signed by its President, to the Academy and Convention. The Academy was positive, the Convention negative, but it was practically decided by mutual agreement at a meeting in Philadelphia and by correspondence to go on with the work in Sweden by first finishing the volume of *Miscellanea Theologica.* On the strength of this understanding I returned to Sweden, but found that the price of paper had risen enormously. The Treasurer of the Academy, in charge of the work on behalf of the American bodies, cabled that the paper price was impossible, and later there arrived another cablegram for the Academy stating that the Board suspends work during the war. I supposed this meant the phototyping, for a letter from Professor Acton on behalf of the Academy clearly contemplated the continuation simultaneously of the scientific series.

It was always well understood since 1902 that the scientific and documentary work should be done according to time and opportunity, and this was also clearly advocated by Professor Acton in his Reports, 1917, after full consultation in America by all concerned.

All my efforts to secure employment on the scientific and documentary work promised in London have failed so far, and appeals in 1918 to bodies and individuals in America, England and Sweden for financial support for the scientific and documentary work have so far met with no response. I have also contemplated temporary employment in England, Boston or Bryn Athyn on such work until new arrangements for the phototyping can be made, but do not know whether my request and proposals will be heeded.

My claim on the Academy's support during this crisis, either here or in Bryn Athyn, is that I gave up work at the University of Pennsylvania in 1906, when I might have continued on my Fellowship and afterwards gone to Columbia University, in order to return to Sweden to specialize on Swedenborg's texts. My work here has been highly

successful, but I am now completely stranded and much hampered, as there has been no opportunity to take my examinations for the Doctorate. I have returned to Sweden and devoted the remainder of the six months of 1917 exclusively to the phototyping, according to stringent and unequivocal instructions from the Treasurer and Secretary of Convention, and since then for the remaining six months of the financial year to the scientific and documentary series, making good progress. The notice to stop work arrived during the present quarter, and as I ought to have at least three months' notice, I request that my salary be paid as usual until the close of the quarter and of the financial year. I request further that I be paid in full in kronor without reduction. After July 1st I need a short holiday, for I have been under an enormous mental strain for some months due to the uncertainty in which the Bryn Athyn officials have left me, by not replying to my urgent letters for instructions and funds. I have borrowed the money necessary to go on, and have been obliged to sell my office furniture and library in order to meet running expenses.

I submit that after working for the Academy and other bodies for sixteen years I have deserved different treatment. My first feeling on beeing so unjustly treated was one of great indignation, but now I desire above everything else to rescue the work in Sweden, for which I have freely offered time, labor, my whole income for sixteen years, and much borrowed money besides, from ruin, and request most earnestly your continued support and cooperation to enable me to proceed with the scientific and documentary series.

ALFRED H. STROH.

Upsala, Sweden,
June, 1918.

Postscript.

Since writing the above I have also written two formal appeals to the Presidents of the Swedenborg Scientific Association and London Swedenborg Society, the three appeals for support and help in the present crisis being included in Vol. I. of the *Archives* at the close of Part II. So far as the scientific works are concerned, I have made excellent progress with the fourth volume of the *Opera*, the finishing of which was intended according to Professor Acton's Report and Memorial, confirmed in his letter of last March on the Academy's official paper, and may now add that an official communication from the

London Swedenborg Society to Professor Ramström and myself also proposes the editing by us as coeditors, at the Society's expense, of Vols. III. and IV. of *The Brain*. Having consulted the venerable President of the Swedenborg Committee, Professor Custaf Retzius, and the Secretary of the Royal Swedish Academy of Sciences, Professor C. Aurivillius, now in charge of the edition, in which the Latin MSS. *re* "The Brain" will be included, I hope that satisfactory arrangements will be made by Professor Ramström and myself with the London Society so that the combined Latin and English results to be printed by the Stockholm Academy and London Society will appear in due course. I have also immediately written to the Professors C. E. Doering and Alfred Acton of the Association requesting the cooperation of the American interests, having previously forwarded the promised list of American subscribers to the *Opera*.

You may suppose, and so may also the Board of the Academy in Bryn Athyn, that in view of the Treasurer's letter I ought to give up all hope of further support. But I have instead followed my immediate impulse, confirmed after full reflection, to protest against this treatment with all my might. I do not welcome the fate of others who have been forced to sever their connections with the Academy, such scholars as Rudolf Tafel, Louis Tafel, John Whitehead, Eugene Schreck, R. J. Tilson, William H. Benade. Recalling the fact that I for conscientious reasons resigned from the General Church two years ago, but last November withdrew my resignation, due largely to your refusal to accept it, and to the information of friends who stated to me that you and Mr. Raymond Pitcairn were desirous of supporting my work, but anxious that I withdrew my resignation, I feel impelled to remind you and the Board of these facts, and also to state plainly why I resigned, and what my attitude is today, so that if the Academy will reconsider the recent indefinite postponement of the work in Sweden there may remain no doubt in the minds of all concerned as to our mutual positions.

During the crisis some years ago of the work in Sweden, you wrote as President of the Academy that its relations to me would continue. I felt greatly relieved, and after confessing to you and to my other intimate friends in Bryn Athyn, Professors Acton and Odhner, the nature of my mental reservations, I felt greatly relieved by your sympathetic attitude, and also by Mr. Acton's advice that I ought not to worry about my future, for I was in the hands of my friends. Not only you have mentioned the possibility of a professorship in the Academy for me, for which you considered I was qualified, but Mr. Odhner many years ago proposed that I give up my work

in Swedenborg's Science and take over his portfolio in Church History. His last step was to urge that I begin to publish my *Archives*, which I have followed, and to finish Vol. II. of his *Annals*. Still earlier Miss Beekman and her set desired that I be appointed Professor of Philosophy. This was before my departure for Sweden in 1902, after which my well known standpoint in favor of a free critical research in this field brought me into conflict with the dogmatic authority standpoint, which the leaders, influenced by Miss Beekman, began to apply also to Swedenborg's early works, leading to the great controversy and to a reaction on the part of Mr. John Pitcairn and other clearsighted men who perceived the danger, especially after Mr. Pitcairn's attempt in 1912 to "convert" me. You also after 1913 had a change of heart and view, which everyone believes has led to greater freedom in the Academy, for the previous Bishops resolutely refused to depart from the extreme authority position, avoiding all discussion of critical difficulties in Swedenborg's works, while you have been perfectly fair and free in your treatment of all parties.

While a theological student I was greatly influenced by the humanism and classical spirit which since the Renaissance has tended to weaken ecclesiastical authorithy. My studies of Hebrew, Greek and Latin texts convinced me that such positions as had been held in the Academy and in the New Church concerning the sacred books were untenable. Here for the first time I came into conflict with the doctrine of literal infallibility into which I had been indoctrinated since childhood, especially when by consulting the New Church literature I found that others had found the same difficulties, and that American and British students secretly held the same positions at which I had arrived. The same I found to be the case later with crucial scientific, historical and other difficulties, not only in the scientific but also in the theological works of Swedenborg. I finally took an open and clear position so far as the early works are concerned, but avoided the far more important questions raised by the difficulties in the theological works, although Professor Odhner invited me to raise the questions of sexes of plants and spontaneous generation in the *Life*, but I declined, as I feared the consequences for the doctrine of authority, which I could not relinquish. I now acknowledge no authority but the Truth, and with Ramus, Descartes and Swedenborg I submit that philosophical questions must be decided by experience, geometry and reason, and not by any authority in a text.

Can the Colleges of the New Church in Bryn Athyn, Boston, and London, openly facing the problems raised by textual criticism, modern biology, and critical, historical and philosophical research, relinquish

the authority positions held by all bodies of the New Church in some form or other? Will my own College openly defend the rights of its teachers and graduates for freedom of research and freedom of publication without any intolerance or persecution? I used to wonder why Dr. R. L. Tafel in his later years began to withdraw from the authority position; I now wonder why he ever defended it so long in view of his opportunities in Sweden. Probably he had to work first and think afterwards. The same is true of those ministers and laymen everywhere who have become examples of a statement which an official of the New Church in England quoted to me some years ago: "The New Church has been the grave of many a fine intellect."

I now propose that this shackle of authority which suppresses free research and university scholarship in the New Church be openly repudiated, and that especially I, who have for many years been working on Swedenborg's texts on behalf of the Academy and Association, and of other bodies, be properly supported, without hindrance, in finishing the editorial work undertaken hitherto, and that all New Church and Swedenborgian bodies of every shade of opinion combine to first of all publish by the press the manuscripts of Swedenborg not yet printed, by continuing the *Opera* at Stockholm. A. H. S.

Special Report to the Swedenborg Scientific Association.

Professor Lewis F. Hite.
President of the Swedenborg Scientific Association,
48 Quincy Street, Cambridge, Mass., U. S. A.

Dear Sir:

From the enclosed Special Report to the Academy of the New Church on Unfinished Business in Sweden you will see that as the representative of the Association abroad I have made a last effort to cause the Academy to reconsider the recently communicated decision to suspend the work in Sweden. If neither the Academy nor Convention show themselves willing to proceed, at least with the scientific and documentary work in hand, I fear that everything must come to a standstill in the near future.

In my opinion the official records of the work in Sweden from 1902 to 1918, printed in Vol. I. of "The Swedenborg Archives", in which I shall also include these Special Reports, prove clearly that the London Swedenborg Society has failed to carry out the purposes

involved in its own resolutions. I am sure that the Academy's Board in 1917 favored the adoption of the Association's Memorial signed by you as President, but for some unaccountable reason their attitude has changed since. So far as the Convention interests are concerned they have never bound themselves by any promises, although some of my friends in Boston representing the Rotch Trustees and Union have formerly suggested the publication in Boston of a new collection of "Documents concerning Swedenborg" and of an American edition of my "Outlines".

In view of the complete failure of any of the bodies in London, Boston, or Bryn Athyn to support me since last autumn, for up to date I have received only one quarter of this year's salary, I have first appealed to the three centres to give me some position or employment either here or in England or America until new phototyping can be authorized, and now appeal to you and the Board of the Association to consider my difficult and even dangerous position, without support for over three quarters of the year, and then with a sudden notice from the Treasurer in charge of the work that everything must stop during the war!

The Association especially, and also the other bodies, have a responsibility to me and to the Royal Swedish Academy of Sciences, for in 1902 and later it was well understood that the *Opera* undertaken would be subscribed for in part in America and England, and that my salary would be paid from abroad. I am reading the proofs of Vol. IV. and feel that I ought to be kept in the field as intended by the Association last year so as to continue and complete this important series, begun with the cooperation of the Association and other bodies. Moreover I have invested all my savings since 1902 in travels and investigations on behalf on the work in Sweden, and in "The Swedenborg Archives", and it is unfair for the three bodies in Bryn Athyn, Boston and London for whom the "Chronological List" work has been done from 1913 to 1918, including also all of my own personal investigations and investments since 1902, to suddenly abandon the work in Sweden and leave me completely stranded and in debt because of their work on which I was sent to Sweden. I request a reconsideration and help to finish everything hitherto authorized and begun with the consent of the Societies.

ALFRED H. STROH.
Representative abroad of the Swedenborg Scientific Association.

Upsala, Sweden,
June, 1918.

Open Letter to the Swedenborg Society of London, British and Foreign.

Dr. L. B. de Beaumont,
President of the Swedenborg Society,
1, Bloomsbury Street, London, W. C.

Dear Sir:

Your recent letter concerning the discussion of Swedenborg in Sweden and England has inspired me to address to you this "Open Letter" in the hope that your position in the Swedenborg Society, for life membership in which I have recently applied, will enable you to lend the weight of your influence and authority to several objects of international importance connected with the Society's uses.

The Swedenborg Society is British *and* foreign, and the Swedenborg Scientific Association, founded in 1898, is also international. As the Association's representative abroad since 1904 I have endeavored to secure international action in the investigation of Swedenborg's significance as a Man of Science, Philosopher and Theologian. I need not refer in detail to the extraordinary events of the year 1910, nor to the detailed story of the work in Sweden as recorded in the series of "The Swedenborg Archives", Vol. I., about to appear at Stockholm, 1918. Suffice it to say that by concerted international action Swedenborg's works and name have since 1902 been made the subject of an increasing study and of much honor.

Unfortunately the phototyping of Swedenborg's MSS. undertaken on July 11th, 1910, by international action immediately after the Swedenborg Congress, was brought to an abrupt conclusion by the Council of the London Society in 1916, the last volume, entitled *Miscellanea Theologica*, not being completed according to the resolutions which were handed to me by the Secretary in 1913 for my guidance. I resigned, but subsequently withdrew my resignation, which withdrawal was however not entertained by the Council, for during 1915—16 every effort was made to retire from further work in Sweden so far as the phototyping was concerned, and this is still true today, although the American Societies in Boston and Bryn Athyn last year decided to finish the *Miscellanea Theologica* as originally planned and intended. In this I have acquiesced, although a detailed report by Professor Alfred Acton, dated February, 1917, also proposes the continuation of the phototyped series after Vol. XVIII., by the inclusion of seven additional volumes. The story of the movement is recorded in Vol. I. of the *Archives*.

Under the supposition that the phototyping will not be resumed for some considerable time I have since last December urged the British and American bodies to support the scientific and documentary series, namely the Stockholm *Opera*, the *Brain*, the *Archives*, and *Documents*. All of these series have been intended and supported by subscriptions in England or America. Thus the *Opera* were subscribed for by a Resolution in London some years ago to the extent of 125 copies to Vol. X. if the *Opera Philosophica et Mineralia* be included; the MSS. of Tafel and Hyde were in 1913 taken to Sweden for editorial work by Professor O. M. Ramström in preparation for Vols. III. and IV. of "The Brain", and the Council has recently proposed that this work be now undertaken according to my plans and suggestions; the volumes of the "Swedenborg Archives", recording unpublished researches by Tafel, Hyde, and others, including my own elaborate investigations in Europe since 1902, have been typewritten under the "Chronological List" Fund since 1913 and distributed; and from the attached letters by Bishop William Henry Benade, former Chancellor of the Academy of the New Church, and by the Rev. James Hyde, F. R. S. L., it will be seen that not only Mr. Speirs and Mr. Hyde have been actively concerned in a new edition of the "Documents concerning Swedenborg", but also that ever since 1902 this has been one of my purposes, in which great progress was made in 1913, when the "List" was laid before the Annual Meeting of the Swedenborg Society, leading to appropriations in England and America for bibliographical and documentary work for £ 900 from 1913 to 1916, and to the sending of Tafel's and Hyde's Collections for the "Documents" to Sweden for completion by me. As long ago as 1907 the Society had taken action in the matter of a new edition of the "Documents", and the later Resolutions show that both Mr. Hyde and I have been concerned in such work.

My appeals to the Presidents of the American Academy and Association not to abandon the work in Sweden have been recorded in two Special Reports this month, and I now send out this formal "Open Letter" to you as President of the Swedenborg Society, trusting that the non-sectarian character of the Society, and the previous actions and resolutions since 1907, will not be forgotten, and will lead to co-operation and financial support of the editor in Sweden even if the American bodies temporarily postpone the phototyping and other work.

ALFRED H. STROH.

Upsala, Sweden,
June, 1918.

Rydal Gardens,
35 Riggindale Road,
Streatham S. W.
October 13th. 1902.

My dear Mr Stroh:

With this I send a letter addressed to Mr. Speirs.

Before presenting this letter to Mr. Speirs I desire to have from your hand an acknowledgment of the receipt of the same, together with an engagement to deliver into my hands the documents therein referred to, before your departure for America, and a further engagement to procure and to transmit to me the package of letters addressed to me by Dr. R. L. Tafel, which were loaned to the Rev. C. Th. Odhner of Bryn Athyn, Pa. which, among other things, have an intimate relation to the procurement of the before mentioned documents.

You will have time to examine the letters in respect to the various matters of your quest before you leave Europe, and I desire to have the letters and documents in my possession without any further unnecessary delay.

Yours truly
W.M H. BENADE.

This copy of Mr. Benade's letter to Mr. Speirs was made by me on receipt of Mr. Benade's letter.
Alfred H. Stroh.

Rydal Gardens,
35 Riggindale Road,
Streatham, S. W.
October 13th 1902.

Mr. James Speirs,

Dear Sir:

Will you kindly give into the charge of the bearer of this letter, Mr Alfred Stroh, for examination by himself, and for delivery to the undersigned, certain original papers & other certain copies of original papers, now in your possession, as literary successor and executor of the late Dr R. L. Tafel, which papers were in part translated and published by him in the "Documents concerning Swedenborg", and which, as indicated by him in the Preface to Vol. I. of that work — (page 8) — belong to what he erroneously styled the "American

Document Committee", under the direction of the Rev.d W. H. Benade. The "funds required for collecting and transcribing the mass of documents" referred to by Dr. Tafel, were collected and supplied by myself, whilst acting as Chairman of the General Convention's Committee on the manuscripts of Swedenborg, but independently of the cooperation of this Committee. This was well understood by Dr. Tafel, and it was also the reason for the request preferred by him, that I should leave in his hands the original papers to which reference has been made, until such time as they could be published in their original form in a fourth volume of the "Documents concerning Swedenborg". This request was willingly granted, but as the plan was never carried into effect, and as the documents ought rightfully to be in my hands, I ask you to return them to those hands through Mr. Stroh, and anticipating this act of kindness — I subscribe myself

Yours truly
W.M H. BENADE.

"Eastington",
275, Uxbridge Rd.,
Shepherds Bush, W.
Jan. 31st, 1917.

Dear Mr. Speirs:

In accordance with the request of the Committee of the Swedenborg Society that I should make a statement at the ensuing meeting, relative to the *Documents concerning Swedenborg*, I prefer to do so in writing.

First with regard to the wolumes prepared by Dr. Tafel thirty years ago. Since their completion, many other documents have been found, and many inaccuracies in the volumes themselves have been discovered. These errors are of different kinds — typographical and others such as can only be detected by comparison with the originals, or such as appear from more recent knowledge and new documents. Of these the first mentioned are (though considerable in number) of the least importance. The volumes need very careful supervision. Disregarding the contents of Dr. Tafel's notes, there are, in his monumental work, 463 separate documents; 9 of these are made up documents, that is, they are made by Dr. Tafel himself, as, for example, the Chronological List of Swedenborg's works on pp. 884—1023 of volume III,

called Document 313, covering 140 pages, now superseded. Subtracting these 9 "made up" documents from the total number, 454 remain to be dealt with, both by way of supervision and reproduction in their original language. Of this number, 62 are in English; but this does not mean that they do not need oversight. I would urge that in supervising the existing volumes, the documents in English should be restored to their original form, this being both less expensive to the Society, and more satisfactory to the student. Otherwise, they must be printed again when the originals are printed.

Second, with respect to the supplementary documents. I know at present of 81 items which belong to this section of the work; and in addition, I am sure that others are to be found in places I propose to search. But this latter means expense. Many of the found documents I have already copied and translated. In the foregoing statements I have not included a matter which may be introduced here, for it is not at present evident whether it can be used in the existing volumes or must be part of the supplementary volume. I refer to document 132 of Tafel's work — namely, that which deals with Swedenborg Lawsuits. The Documents relating to this matter Tafel summarised, translating only *one* out of *fifty nine* of them, and further omitting parts of other documents in other parts of the work. As for instance, the letter which was purchased at the last meeting, has been translated and printed only as to about a half of it, in Tafel's work. There are others in a like case. The omission of 58 out of 59 documents is unsatisfactory, and requires adjustment.

Third, as to the reproduction of the originals of all the documents, both those already translated and those more recently discovered, it can be seen, from what has been said, that this is a large undertaking, although the annual meeting of the Society has resolved its completion, for, so far as our researches at present have shown, there are some 580 documents to be included. This cannot be done until the new documents are printed in English and the old ones are supervised. Hence, I suggest that this part of the work should remain until it is fully known what is to be contained in it.

The question of the whereabouts of all these papers naturally arises. Of the 454 in Tafel's work, the Society has 166 originals or copies. I have 438, and there are 14 of which neither of us has copies of the 58 papers omitted from Document 132; and of those more recently found most are also copied.

I was requested to give some idea of the probable cost of this work. In the absence of some matter necessary for the task, and in view of the probable discovery of other documents, my estimate can

only be relative. But so far as I can at present foresee, I judge that for the careful supervision of Tafel's three volumes, without unnecessarily altering his text, and providing an English version of all new documents discovered (provided always that the work of seeing the same through the press is also entrusted to me) the cost, exclusive of printing, will not be more than £ 200 The later work of reproducing the originals is not included, and is regarded as a separate matter.

Yours truly,
JAMES HYDE.

DÆDALUS HYPERBOREUS.

Eller

Några Nya

MATHEMATISKA och *PHYSICALISKA*

Försök

Och

Anmerckningar

För åhr 1716:

Som

Welborne Herr Assess. Pålheimer

Och

Andre Sinnrike i Sverige

hafwa giordt

Och

Nu tid efter annan til almen nytto lemna.

DÆDALUS en auras carpit, ridetqve superne
Quos sibi Rex Minos struxit in orbe dolos.
Auras *Arte tuâ* sic tu, mi Dædale! carpe,
Atqve dolos ride quos Tibi turba struet,

Försäljes af Bokföraren.

UPSALA,

hos Kongl. Maj:tz och Upsala Academiæ Bokt.

JOHAN. HENR. WERNER 1716.

Stormächtigſte Allernådigſte Konung/

AT jag driſtar mig framkomma med några ſmå Mathematiſka Förſök och Anmerckningar/ och them i diupeſta vnderdånighet nederleggia in för Eders Kongl. Majeſtetz fötter/ giör then nådiga omwårdnad Eders Kongl. Maj:t teckes hafwa

om bokliga konſter i gemen och i ſynnerhet om Studia Mathematica; hwartil et ſå ſtort prof år / at Eders Kongl. Majeſtet har altid nådigt anſedt the Konſter och Machiner ſom Herr Aſſeſſor Pålheimer har til Eders Kongl. Maj:ts och Theß Rikes tienſt och nytto / antingen redan anſtelt eller gifwit om theras werckſtellande vnderdånig Förſlag.

En del af them har jag i thetta lilla wercket beſkrifwit / och tillagt några Andra Lärda Måns / Eders Kongl. Maj:ts vnderſåtares Anmerkningar / jemte mina egna Förſök / them jag genom trågen eftertancka ſökt at mogna / både hemma / ſom ock i 5 åhrs koſtſamma reſa i the vtrikes orter / ther Studia Mathematica meſt yrckas och äro i högſta wärde.

Thetta är allenaſt en början / Allernådigſte Konung / mycket mera är ännu qwart och nedgiömt / ſom förmodeligen ſkal lenda til Eders Kongl. Maj:ts Rikes ſtora fördehl / enkannerligen til Manufacturiers, Navigations, Attolleries och Skut-konſters förkofring.

Winner

Winner thetta Eders Maj:ts Konungsliga Nåde / vpwecker thet wisserligen monga flera / at i vnderdånighet opteckia sina tanckar / och opoffra them til Eders Kongl. Maj:ts nådigasta behag. Förblifwer til min dödzstund

Eders Maj:ts
min allernådigste Konungs

Vnderdånigste och troplichtigste
Vndersöte
Eman. Swedberg.

Benägne Läſare!

THet ſom nu i dagsliuſet framgifs / är en frucht och ſåſom en förſtling af then bref-werling/ ſom några Lärde Män och the Mathematiſka wettenſkapers älſkare i Upſala haft med wår Swenſka Archimede Herr Aſſeſſor Chriſtopher Polhammar. Thet har i alla tider warit klagwerdt / at man wanwördat en berömlig ting/ ſå länge hon ännu warit behållen/ men när then är förloradt / hafwa wij then ſaknadt:

Virtutem incolumem odimus,
Sublatam ex oculis quærimus invidi.

Thetta at förekomma / hafwa ſom ſagt är / några Lärde i Upſala / 15 åhrs tid genom bref jemnfördt med bemälte Herr Polhammar ſina tanckar / och bekommit Theß ſwar / hwarvthi många diupſinniga meningar / nya Experimenter, Inventioner och Machiner, både til vplyſning vthi Mechaniquen i gemen / ſom ock vthi Phyſica generali & ſpeciali; i Aſtronomien; ja ock vti Oeconomien äro giorde; hwarvti alment intet mera förſök giöres än ſom en gång är wedertaait/ och hwar och en tycker thet wara nog / ſom Far och Mor giorde för honom.

The Vtländſke hålla meſtendels ſå före/ at wåra Nordiſka och kalla länder äro föga fallne til Scientias Mathematicas; men the döma blindt / och hafwa fått anledning ther af/ at hos them mera tilfel-

le

le och opmuntring warit til samma wetenskapers opbrukande/ och the i följe ther af/ mehra vrettadt. Enkannerligen må man wel berömma theras Societeter eller the Lärdas Sammankomster/ ther hwariom och enom är fritt gifwit en ny mening at yttra / med andras then samföra / och sedan når then pröfwes wel grundad / alment vtgifwa.

Wi wilje giöra oß hopp om thet samma / når then Högsträdande Gud förlånar wår Oförlikneliga Monarch Fred och rolighet ifrån sina många och hetska Fiendar. Emedlertid ärnar man hwar 2 eller 3 Mäuader emot något vtgifwa / nu i Mechanicis om nya Opfodringz och watns Machiner, om Vhrwärck och thylikt. Nu i Astronomicis; hwarvthi wåra nordiska obſervationer så merkeligen kunna oplysa the i Söderländerne giorda: nu i Oeconomicis, Om Husbyggeri/ Spisars och Vgnars tillagande etc.

Man lefwer vthi then goda tilförsicht at thetta så benåget anses och optages / som thet til almen tienst welment opofras. Farwel.

Upsala den 23 October.
1715.

Em. Swedberg,

Förteckning på hwad åhretz 1716 Dædali innehålla.

Dædalus I.

1. Aſſeſſor Polheimers Öretnb / medelſt twenne Sphæriſka Segmenter, beſtrifwen och noga uträknad. pag. 1
Samt en annan thylik / med ett paraboliſt och ett Elliptiſt Segment ſtelte emot hwarandra; med theß uträkning. 4
En annan liten öretnb brukad i England ther gny och forl år. 6
2. Aſſeſſor Polheimers Experimenter om Liudet och theß beſkaffenhet. 6
Förteckning på några Experimenter ſom ännn kunna giöras om liudet. 10
3. En Däntub / hwarmedelſt ett Liud eller dån kunde förmeras / at thet höras ſkulle vr ett ſtycke på dubbel och trippel diſtance ſå hårdt ſom på enckel; af N. N. 12
4. En Opfodringz konſt wid grufwor / ſom i repgången låter omwexla ſig; invent. af Eman. Swedberg. 14
5. En annan opfodringz konſt / ock af Em. Swedb. 20

Dædalus II.

6. Aſſeſſor Polheimers förtreffeliga opfodringzkonſt wid Blanckſtöcken i Fahlun, aſſatt och beſkrifwen. 25
7. Profeſſorens Doct. L. R. tanckar om Saltz tilwerckande i Nordlendren medels frysning och then Swenſka kölden. 28
8. Upſatz på några Experimenter, ſom winter tiden kunde anſtellas. 30
9. Ett behendigt ſett at räkna Intereſſen på Intereſſen til monga åhr / genom en ſimple triangle, af Aſſeſſ. Polheimer. 31
10. En liten tafla / ſom ock ett wigt maneer at räkna Caroliaren ſedan förhöjningen / af Eman. Swedberg. 33
11. Profeſſorens Joh. Vallerii noga obſervation på Solens ſtora Förmörckelſe den 22. April. 1715. 40

Dædalus III.

12. Ett nytt och accurat ſett at uträkna Betzman / af Aſſeſſor Polheimer. 41
13. Ett nytt och lett maneer at giöra Antlior eller wåderpumpar / genom watns ingintande i Canaler, af Eman. Swedberg. 50
Med theß Analytiſka / Mech. och Arithm. uträkning för watnetz och wådretz rymd i ſådana Antlior. 58

Dædalus IV.

14. Aſſ. Polheimers wiſſa Anmerck. om wådretz reſiſtence mot fållande tyngder 65
Om the tyngre och lettare kroppars åtſkilnad i fall. 70
Om Statu Naturali ſom tyngdren falla vti. 73
Om ratione duplicata ſom förmenes wara i fallen. 78
15. Utkaſt til en Machine at bruka wingar och ſegel i wådret och tentera flychten / af N N. 80
16. Ett experiment med papper omwridit om en blykulo / ſom intet afbrinner förn blyet ſmelter. 83
17. Ett experiment om ſnö och watns reſiſtence mot blykulor i theras ſiörſta fart / och om the ſtußningar the giöra i ſnö och ur ſno / af Em. Swedberg. 84
18 En ny Methode at finna Longitudinem Locorum til Siös ſom Landz / af Eman. Swedberg. 86

Fig: 1.

Fig: 2.

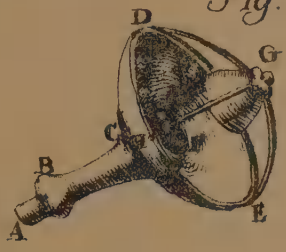


Fig: 6.

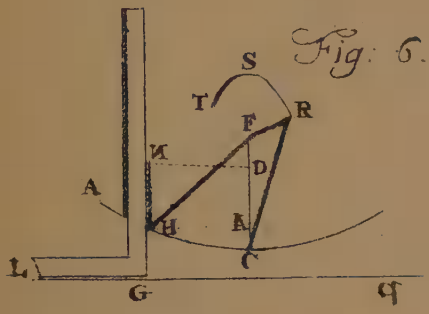


Fig: 1

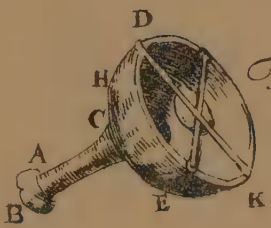
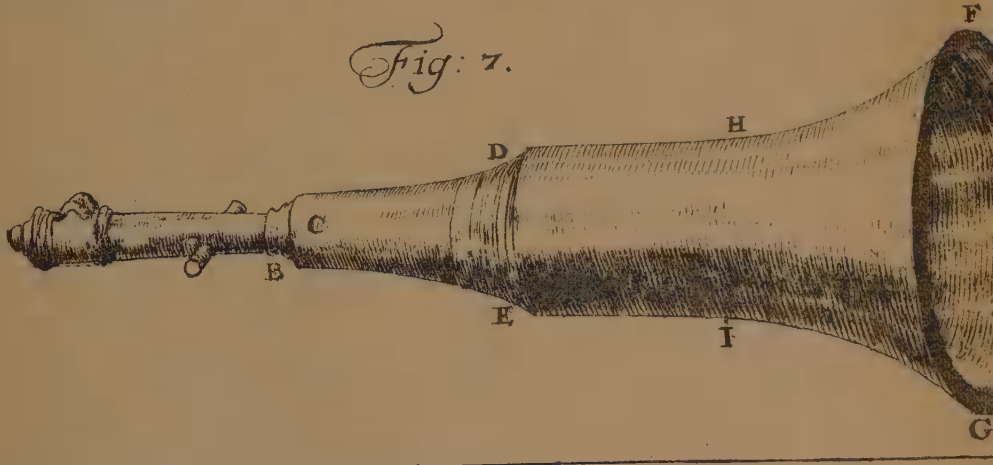


Fig: 7.



Pag: 11.

Fig: 3.

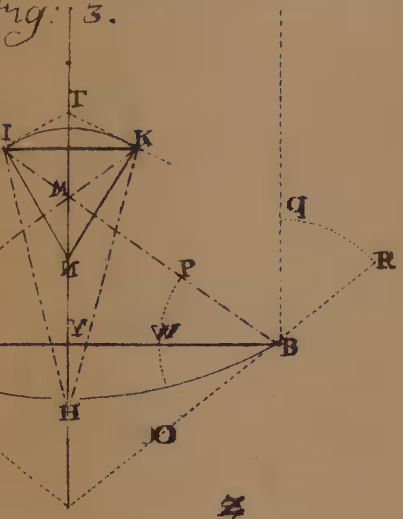


Fig: 4. Fabula 1.

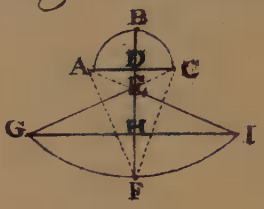
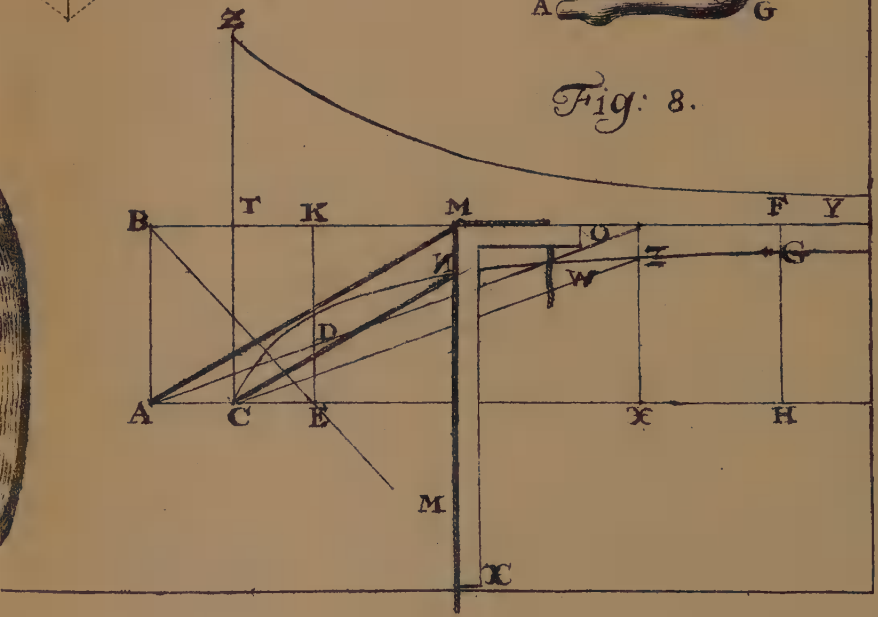


Fig: 5.

Fig: 8.



Assessor Polhammars Instrument at hielpa Hörslen.

Detta Instrumentet wij ärne at beskrifwa / tienar hälst til theras fromma / som på Hörßlen hafwa mehn / fådt antingen genom ålders tiltagande / eller genom Örslag och dån / eller annat dylikt / som giordt at örhinnan remnat / eller blifwit slakare / än at then sedermera kan gióra then wanliga tremulation, och gifwa tilkännas then rörelse och sensation, som af wädret förorsakas. Theß construction är som följer. 1. Thet gióres af Meßing eller Koppar eller Silfwer / eller af någon annan Metall / eller om behagas af tunnslagna Järnplåtar; och kunde thet af glas eller tiockt Papper och förfärdigas. 2. Gióres theraf ett segmentum sphæræ, ut in Fig. 1. som är mindre än 90 grader och större än 30 / skulle bäst tiena the af 50 eller 60. 3. Ther mitt uppå blifwer en öpning nemligen F, til ett rör eller en tub som småningom aftager til A. 4. Ett annat sphæriskt segment af mindre diametre settes gent öfwer öpningen F. nemligen G. som fästas med ståltråar HK och DE tilsammans. Hwaraf sker at liudet / som faller på segmentet DE slår sig up i lilla halfklotet G, och therifrån i F, och så widare til A. 5. Kommer ock wid B Fig. 2. at settas en liten oval / eller ett metall öra / hwarwti liudet begynner at widga och gifwa sig ut igen; och giör sig så mångfalt / i samma proportion, som Instrumentets inre superficies är til sielfwa örat. Och om tå A är wändt til örat / faller liudet hopsamlat och 20 a 30 resor mångdubblat thit.

Descriptio Fig. 1.

Men bör achtas at D E wändes ända åt liudet eller åt then talande / ty eljeſt faller en del vtom lilla halfklotet G. Worde en ſådan af ſpägelglas giord / ſkulle i lilla klotet afbildas thet ſom bakom wore / men i mindre. Thenna örtub för ſitt wärde och nytta ſkull / har blifwit af ſilfwer förfärdigad / och til hennes Majeſtet Änkiedrottningen nu hos Gud ſalig / handgifwen. finnes hos bemälte Auctor ock andra af ringare materia för billigt at bekomma.

Mechanicè Fig 3.

Mechanice giöres och opritas ſamma Inſtrument, Fig. 3. hwareſt A B är ſubtenſen, och ſegmentet til then ſtörre caviteten eller klotſtycke; I K til thet öfre eller mindre. 1. A B och I K tager man efter behag / en boga af 50 eller 60 grader. 2. Fälles en perpendiculaire linea QB på AB, ſå ock FA, hwilka äro the ſom liudet giöra / när thet kommer ifrån en temlig diſtence 3. Nu ſom liudet ſtußar tilbakars / och ſtußliniens angel är lika ſtor med then infallandes / ty drages en Tangent OR och XE til Puncten B och A, och ſättes Angeln QR emellan PO, ſå ock EF emellan GX at the äro lika ſtora / och drager ſå BPI och AMK. 4. Som ock liudet bör ſtußa therifrån til öpningen H, nemligen från I til H, och från K til A, therföre ſökes Diametern til then lilla cirkeln. Man har tagit IK efter behag och ſatt then på andra ſidan om Sections puncten M: Ty delar man angeln B I H i tw / och drager igenom biſſections puncterna linien IN och KN, och ſå blir N Centrum til then lilla cirkeln, och IN ſemidiametern och ZH diſtantien. Doch bör man märckia at man ſätter för grund / thet liudet kommer perpendiculairt på pläten: faſt thet kommer doch vr ett wiſt centro, nemligen ther liudet begynnes; hwarifrån thet rundar ſig i wågor / tils thet faller på bemälte ſegment: men om then diſtantien är någorlunda ſtor / ſkiljer liniernas obliqvitet ganſka litet från para-

paralelismo. Therjemte sätter man tredie Samlings puncten vti F. Fig. I. Hwilken man och kunde föra längre ned til C om så behagades / som på ett vtfaller.

Geometrice at finna distantien ZH: ware AB och IK efter behag gifwen; och när man wet segmentet AHB, har man angeln AHB ≐ cirkel bogan AHB; lägges QBA ≐ 90 til / och af 180 drages / har man then winckeln QBR; och således PBO lika stor med then. Man sätter AB ≐ 2a. IK ≐ 2b. Sinus Ang. MBY ≐ n. Anguli YMB ≐ m. Så är genom sinus, m: n:: a: $\frac{an}{m}$ ≐ MY. Och sedan i the liknyta trianglar IZM och BMY, är a: b:: $\frac{am}{m}$ (MY): $\frac{an}{m}$ (ZM) och Summan är ≐ $\frac{bm+an}{m}$, thet är som 1 til IZ † YB:: så MBY sinus til ZY. Semidiametern IN finnes / när man har Sinum YB, och semidiametern H3: har man then Complement YH, så ock ZH. Sedan $\overline{IZ}^2$ † $\overline{ZH}^2$ ≐ $\overline{IH}^2$, och $\overline{IZ}^2$ † $\overline{ZM}^2$ ≐ $\overline{IM}^2$. Och efter som IN delar angeln MIH i tw / äro alla sidorna liknyta eller similes, nemligé Sumewis / IH † IM : IH :: MH: NH. Och som ZH - NH ≐ NZ ≐ har man $\overline{ZH - NH}^2$ † $\overline{IZ}^2$ ≐ $\overline{IN}^2$. Som är thet som söktes

Geometrice Fig. 3.

Arithmetice: följa några exempel vträknade efter methoden som förbemält är / neml. 1. när AHB är 60: och AB ≐ 16 tum. IK ≐ 4. är ZY ≐ $\frac{bm+an}{m}$ ≐ $7\frac{5}{11}$ tunn. Semidiametern IN ≐ 3, 22.

2. Är AHB ≐ 60. och AB ≐ 71. och IK ≐ 22, 3. är distantien ZY ≐ 27. och ZH ≐ 41. och lilla cirkelns semidiameter IN ≐ 18.

3. Om

3. Om Cirkelbogan AHB är ⸗ 50, och AB ⸗ 20 och IK ⸗ 5. Är distantien ZY ⸗ 10 ½, Och lilla Semidiametern IN ⸗ 4, 9.

4. Är AHB ⸗ 50. AB ⸗ 16 tum. IK ⸗ 3. Så är distantien ZY ⸗ 8/25. Och semidiametern IN ⸗ 2,95.

5. Eller om man tager ett Segment af 90 grader, som af (Fig. 1.) vtwises / kommer distantien emellan bägge kloten ei widare at vträknas / än at thet mindre sättes paralelt eller sidjämt med öfwerstа brädderna af thet större; neml. G kommer lika höglänt med K och D.

Ett annat dylikt *Instrument.*

Descriptio Fig. 2.

Thetta är thet förra likt / allenast man tager ett Segmentum Parabolæ och ett Ellipseos i ställe för the Sphæriska bägge: Hwilka Instrumenter som the löpa vr ett Fundament, och drifwa liudet fram och tilbakars med ett twefalt Echo i örat anmäles allenast härom at kunna vtwäljat om man behag therwti finner. Then större Caviteten DLE är ett stycke af en enckel parabel, then lilla G, är af en Ellipsis, och wid B ett rundt hohl. Ty alla the linier som falla perpendiculairt på Parabelns subtense GI (Fig. 4.), the stöta tilhopa i bakstußningen i Foco E. Så och med Ellipsin: alt som kommer från Foco E til theß superficiem eller til A, thet stußar til andra Focum i F, efter Apollonii Reglor.

Mechanice then at oprita: man tager först en rätwinckel AGL, Fig. 6. och fästar en trå i Foco F, och andra ändan i N; och begynner i C eller hwar man will at draga Linealn affides / at sidan GL följer altid linien qL efter: När trån NHF hålles spendt til Linealn, beskrifwa puncterna II en Parabel. At få thet Elliptiska

Seg-

Segmentet RST, tager man samma två och fästar ena ändan i F, och then andra i C, och drager så med en Cirkelvdd eller krita trån spendt i ▭ winkel R, så giöra thes puncter then lilla ovalbogan RST.

At bewisa thet trån FHN giör en Parabel, ware CD = a. CF = $\frac{p}{4}$. CK = x. KH = y. är FHN = a + $\frac{p}{4}$. så gifwes FK = x - $\frac{p}{4}$. Om KD eller HN subtraheras af a + $\frac{p}{4}$, blifwer FH = $\frac{p+4x}{4}$ qwart; och således FH = FK = KH thet är/ $\frac{p+4x}{4} - \frac{x-p}{4}$ xp = yy. neml. then æqvation som är Parabeln tilhörig. Qvod erat demonstrandum.

Geometrice at finna samma boglinier, se Fig. 4. Först tages ett Segment af hwad Parabel som behagas/ doch så at Focus E är öfwer GI: therföre har man bekant EF = $\frac{1}{4}$ Parametro: så och HI och HF, nemligen HI = EF x HF. så blir proportion HI: AD:: EH: ED. och sedan HI: AD: EI: AE. Thernäst HD + DF + AD = AF. och Summan AE + AF = BF + EB, eller lik med then större Ellipseos Diameter: ut Apolonius. Geometrice Fig. 4.

Arithmetice. När EF är = 8. HF = 2. är HI = 4. DE = $1\frac{1}{2}$. EB = $6,\frac{2}{10}$; Hwaraf proportionen kan tagas til andra liklynta Parabolas och Ellipses. Arithmetice

Om

Om then lilla i England brukade Örtuben.

DEt finnes ock hos andra små Tuber tienliga för the Liumhörda; och i gemen för alla them som äro ther ett stort sorl är: Han giöres lika med then som ses i Fig. 5. Hwareſt DFEE är then större ypningen / som tager småningom af efter lineam hyperbolicam til CG; hwarifrån han wrider sig i en rättwinckel / och tager af efter samma proportion tils A, men i wägen wid B / widgar han sig i en liten ihohlig sphæra: om tå ändan A sattes åt örat / når mycket sorl är / och tales wid andra ändan DE, höres liudet så starckt och stiljachtigt som talttes man allena wid.

Aſſeſſor Polhammars Experimenter om Liudets Beskaffenhet.

IBland the Bref som bemelte Herr Aſſeſſor har behagat tilsenda them som woro af then förr omtalte Societet är och ibland monga ett til Högl. Herr Bibliothekarien Eric Benzelius: hwarwti finnes experimenta om Liudets beſkaffenhet: förmodande om dylikt warder meddelt / man sedermehra them kan bruka til yplysning af andra Inſtrumenter och påfunder; Nu som Hörßlens och Liudetz gång bäſt kunna liknas med watturinglar och wågor som af en rörelſe ske / äro the följande: 1. När man omrörer lungt och stilla watn / tå utsprida sig små wågor i runda ringlar / hwilka småningom aftaga och förswinna: hos hwilket thetta är at merckia. 1. Ju gröfre och långsammare / (nembl. med ett stort och tungt ting)

ting) man omrörer watnet/ ju gröfre bliſwa och wågarna 2. Antingen the äro gröfre eller grannare/ ſå gå the näſtan på lika tid lika diſtance. 3. När the ſtöta emot något ſom theras framfart hindrar/ gå the ſamma wåg tilbakars/ och i en ſådan angel, ſom thet mötande planum them terminerar. 4. Men i ſynnerhet är til at märckia/ at när watn ſlås uthi en ränna eller ho/ tå löper thet fort med wågar: och ſå ſnart något hindrar the ſamma/ komma the tilbakars med lika fart och haſtighet!

2 En Lina ſom hänger i ett Gruſſtacht til 100 famnar mer eller mindre/ har en ſådan egenſkap/ at när man ſlår på then ſamma uppe eller nidre wid enthera ändan med ett wedträ eller annat/ tå löpa lika ſom wågor förmedelſt linans ſwängande af och an ſåſom ormlänkar hela linan igenom: och ſå ſnart the komma ther linan lycktar eller är feſtad/ löpa the ſamma på lika ſätt tilbaka. Hwar hos thet är at märckia [1.] At ju gröfre och tyngre lina/ ju långſammare löpa wågorna. [2.] Och ju större och gröfre trä man brukar at ſlå med/ ju gröfre bliſwa och ſamma wågor/ men ſå mycket man ungefär märckia kan på lika tid lika diſtance. (3.) När man omſnorrar en rund och ſlät kula under watn; Förorſakar then ſamma föga wågor kring om ſig/ men är hon ojemn och knuglig/ giör hon them anſenliga. Hwar hos ock thetta är at merckia/ ju haſtigare rörelſen ſker/ ju grannare bli ſamma wågor och twert om. (4.) När man ſammanlägger en hög med fiſkblåſor/ och ſprettar på en af them med en fiäder/ tå dalrar hela högen/ och om thet wore möjeligit at ha ſå ſtor hög theraf ſom wederborde/ ſkulle man ofelbart märckia at ſamma darring ſkulla ſträckia ſig anſenligen i widden/ och göra en reflex ſom watnet. (5) När en ting ſnärras omkring i luften/ ſom ej är rundt och ſlätt utan til/ tå giör thet ett liud och låt/ och ju haſtigare ju grannare och ſtarckare.

kare. [6.] När ett stycke tändes an på lång distance, ser man elden långt förut/ innan smällen följer/ at man ther af kan pröfwa at ljudet fodrar tid på distence. [7.] När 2 personer/ af hwilka then ene står up i högden och then andre ner under skola talas wid/ tå måste then nedre ropa hårdt/ om then öfre skal höra honom/ men then öfre hörres mycket bättre nid wid. 8. The som warit på Lapfiellen/ weta berätta/ at om en skiuter eller tordön sker ofwan för bärgen/ höra the som i dalarna bo thet mycket gelt och skarpt/ men the som uppe på bergen wistas/ höra thet föga. (9) Är och sagt/ at om 2 pukor äro lika stälte/ af hwilka then ena är ståld på en högd och then andra på diupet therunder/ så skal theras ljud differera, neml. then undra höres gröfre upåt/ och then öfra grannare ned åt. Sammaledes och klockor. [10] Om man giör en lång watutrumma uthur en dam/ så at watnet med force kan löpa ther igenom til then drächt och högning som längden fodrar/ doch så at röret intet börjar wid superficiem, utan lagom och ett proportionerligit stycke ner under watubrynen/ tå skal man befinna at en wäderwirfwel i watnet sig uppar; hwilken spolar omkring med ett starkt ljud såsom af ett Horn eller Trumpet, och oansedt röret är rundt eller fyrkantigt/ snedt eller perpendiculairt, eller wid inloppet huru thet hälst wara wil/ så löper doch samma wridna snecka altid rettsyls/ thet är som hon löpa bör när jorden löper ansöls. Af alla theßa anmerkningar wil man nu sluta/ at hörslen sker på thet sättet/ at wädret som står packat och spent/ lika som en hög af stinna wäderblåsor/ så snart thet blir omrördt/ tå utsprida sig lika som wågar åt alla sidor; och hwareft the hindras eller anstöta/ ther fara the tilbakars: men om något möter som af them kan röras/ såsom ett trumstin/ utspend sträng/ men i synnerhet

öhrt

örhinnan / tå bringas then i lika rörelſe och darring med wåderwågorna: och ju grannare och ſmårre the åro ſom förorſakas af en haſtigare rörelſe / ju haſtigare ſkakas och örhinnan. Men at liudet höres grannare och ſtarckare når thet kommer ofwan ifrån / ſynes thetta orſaken / at althenſtund en hårdſpånd fiäder / ſtreng / trumſkin och annat / darrar haſtigare / altſå ock thet wådret ſom nederſt wiſtas / förmedelſt en ſtörre tyngd och ſammanpakning af thet öfra påtryckiande. Så ock orſaken hwarföre tordönet på Lappſiellen intet höres ſå wält vppe på bergen ſom i dalarna / kommer ther af at wåderwågarna löpa ther mycket gröfre och oproportionerliga emot folkets öron / hwilka åro alt mer gröfre vpåt / och grannare nedföre / men lika åt ſidorne horiſontaliter ⁂ Sedan är merckwärdigt at obſervera the vträckningar / ſom åro in tremulatione ſonorum, & luminis, hwars wågar åro beſkaffade ſom wattuwågor / the ther vtwiſa huru grannare och gröfre wågor kunna förlikas med hwar andra vtom någon theras confuſion, ſamt och korswis / hårt och twårt om hwar andra; hwilka ock klarligen utwiſa rätta reflexions och refractions Anglerna, och hwadan refractionen förorſakas / når wågorna ſpela igenom något annat medium, ſom giör någon mer eller mindre reſiſtence ⁂ Theſſe tremulationer ſom omtalde åro / åro efter Mechaniſka fundamenter de motu, in ratione duplicatâ: ſom til exempel, når Octavens ſtreng är ſom 1 til 2 / tå är theras darrande på lika tid ſom 1 til 4. item quintens ſom 3 til 2 / tå är darringen ſom 9 til 4 / och ſå widare. Nu är merckwärdigt at åfwen ſom kuggwerck fordrar en unitas i ſina proportioner, ſå framt at wexlingarna ſkola gå för ſig / ſom til exempel, om thet ena hölt 8 / och thet andra 4 tå går thet intet an / men 9 mot 4 ſtäller vtwexlingen på 36

altså har thet sig med wågornas proportioner, så i watn som in sono eller i wäder / jemwäl in lumine; hwar om widare en annan gång.

Experimenter som ännu återstå i wårt land at giöra om liudet.

Förn man widare kan then nature och egenskap som i liudet och theß kringspridande förbold är beskrifwa/återstå några experimenter them man i wårt land beqwämligen werckställa kunde: ernande här efter altid något framstella / som ock andras flit och lust kan excercera; Och ther jempte at wisa wårt land wara ymnigare til experimenters giörande än andras; hwilka sedan kunde tiena til wplysning i wåra Machiner, som ock wid handen gifwa något merckwerdigt / så hos andra Societeter, som för wårt egit land nyttigt. 1. Til at få weta wädretz tremulation och theß wågars hastighet som giör hörslen / wore nödigt at noga observera huru lång tid thet giör emellan elden och smellen af ett stycke på längsta och bekant distance, och thet så wäl i diupaste Dalen / som på högsta Bergskullan: jämwäl hwad difference sker i tiden när skättetz liud höres ifrån högden och twert om ifrån diupet. 2. Wid samma tilfälle wore och nyttigt / at noga examinera liudet emellan twenne klockor och skarpliudande pipor / när then ena är ställd i högden och then andra på diupet; Ty theoretice så blir alt liud grannare / när thet far ned på diupet / och gröfre när thet far wpföre / medelst wädres olika tyngd och tryckning: hwilket en klocka uti ett wrpumpat wäderglas eswen utwisar; Nembl. ju mindre wäder ju lägre eller gröfre liud / och twärt om. 3. Hwareſt högder och dalar finnas / wore wärdt at man observerar

Echo

Echo och igenliuden / huru ofta de sig fördubbla nu i högre nu i lägre ställe: om en Barometer och Thermometer hades wid handen / kunde och wäderställningen therjemte annoteras: Enstäns i Italien säjes wara bygt så at Echo och motskallen sig 18 gånger fördublar. Ellieſt är thet med genswaren som med twänne speglar satte emot hwar andra / och them emellan en Pyramid eller liuskrona / hwareſt then samma synes i en spegel 10 a 12 gånger förökad / och en efter annan i en skiön ordning satt / tils then längſte förkommer lika som i ett dunckelt mörcker. 4. Thereſt en glanter is sig sträcker i lengden / wore wärdt at man lade örat ned / och obſerverade huru långt en annan kunde höras som talade wid samma is; efter man finner at ett Canon och Mörsare skott 10 a 20 mihl ibland kan höras wid marcken. Och i lungt wäder kan man temmeligen sachta tala medh then andra öfwer en halſt mils sio. Och om man i en hwalfd kammare talar när wid muren / hörer then andre then andras tal hardt wid andra sidan; som i S:t Pauls Kyrckia i London op i thet runda jernstengslet eller Galleriet är obſerverat. 5. Wid Grufwor kan och liudet nog i acht tagas / som ther äro hwälfda och under jordiska gångor / och rösterna swinga sig 100 Famnar op och ned i Schachten. 6. I tiockt och omilt wäder kan obſerveras huru liudet mißliudar eller diſcorderar mot thet i klart och mildt. Huru Orgtonerne ändra sig i olika wäderlekar / wore så nöjsamt som nyttigt at weta. I starckt wäder och hälſt i motwinden höres ur en wagn en skön Melodie som ett oliudt skrol; och finnes mera diſſonantier an på Claveret tages. 7. Man tage ett meßingshiul / delt i tänder som uhr-hiulen äro / och sätter thet på en spindel i en swarfſtol / och omförer nu fort nu långſamt thet stora swarfhiulet; och lilla tagghiulet röres med ni meßings

eller pen-fiäder/ och obſerveres lindetz difference i groft och grant i proportion til rörelſen. Om ſtora hiulet ginge med watn kunde ännu bätre obſervationen ſke.

Om en Dåntub.

Som man ärnar thenna gången intet ſkrida från thet emne wij oß företagit om liudet / följer ännu ett Inſtrument af en Onämnder projecteradt; hwilket om thet ſkulle i wärcket ſå angå ſom thet ſynes wara med theorien enſtämmigt / ſwarade wel theß nytta mot theß öfriga pris: Thetta Inſtrumentet man kallar Dåntub är förſt tagen af then ſom til ſiös brukelig är: åtſkilnaden är at thenne är fördubblad ſå i ſtorlek ſom i form/ ſå at liudet therigenom ock i ſin proportion blir multiplicerad. Bemelte tub giöres af tunn eller tiock metall, af meßing-koppar- eller bleckjernsplåtar/ och wel poleres: och ſedan mures omkring med tegel eller annan ſten / ſå at then ligger på alla ſidor tett hwälfd omkring / at han af dånet intet ſprenges. 2. Theß mynning C bör wara 1 eller 2 fot / och wid DE 3 eller 4. Från DE går en annan tub af en liklynt boga til FH; hwareſt öpningen är 8 eller 10 alnar: krökningen är efter lineam hyperbolicam. 3. Legges ſedan om behages på ett högt berg / och wid mynningen C ſettes en Canon eller mörſare/ och afloßas / tå ſynes effecten wara/ 1. at thet ſkallet lärer höras på 2 mil / ſåſom thet elljeſt hördes på $\frac{1}{4}$: och at therigenom kunde giöras en mine, ſom wore ett batterie mycket när wid handen. 2. Skulle man med en bößa / piſtol etz kunna giftwa liud therigenom ſom wore thet ett ſtycke / och ſå förmenas ther wore idel Canoner. 3. Som man har ſadt twenne ſådana Dåntuber ehop/ ſynes liudet ſig förmehra i ett gruſlig ſtarckt dån/

dån / och kunde kanſke haſwa en god wärckan på the när motſtående / ſå at man wäl giorde / man ſäge ſina egna öron med wax före.

Mechanice at giöra then bogan ſom fodras til en ſådan tub, Fig. 8. man tager en wiß diſtance ſom AC; och fördubbar then i AB, och giörer ſå en rectangel FBAH. Man drager linier KE, FH, och ſedan från A til O, och en annan paralel från C til Z, hwareſt afſkäres linien OX, ſom i Z äro puncterna til ſamma Curva. Eller man tager en rätwinckel mxo, och diſtantien AC efter behag / båſt wore $\frac{1}{4}$ af mynningens widd. En tråd ſettes igenom öglan M och A, och C til N: när man ſkufwar winckeln. MO paralelt eller juſt efter linien BMY, at tråden går utur öglan M; och hålles CN ſå at then altid går paralelt med AM, beſkrifwa puncterna N en ſådan boglinia. quod erit demonſtrandum.

Geometrice Fig: 8. Siötuberna äro inrättade efter en hyperboliſk linea, men thenna wår efter en rätwinckelad hyperbola; hwars egenſkap wij haffa funnit wara följande / then wij intet wele obemärckt lemna: neml. 1. Om man ſkiär af linien BM i E, ſå at CE och DE äro lika / och DE och DK: och drages ſedan linien AEH finnes theraß Ordinatæ och diametri wara in proportione harmonica, eller ſom 2 / 3 / 6. eller ſom / 6 / 9 / 18. äro ſins emellan / neml. 3 - 2. 6 - 3. ſom 2. til 6. eller differentiæ ut entrema. I ſådan proportion äro DE, ZX, GH, til CE, CX, CH. thet är om CH ⌀ x. GH ⌀ y. DE ⌀ p. är altid $x \diamond \frac{py}{2p-y}$ och $y \diamond \frac{2px}{x+p}$: hwilket är then ſamma proportion ſom mechanice wiſtes. 2. at (y) eller ſemidiametri, aldrig kunna ſtiga högre än til 2p eller 2DE ⌀ KE.

Arithmetice kan tubens widd och lengd uträknas, när man följer the föregående reglor: när TC eller $\frac{1}{2}$ wid-

den i mynningen är = 2 edd. eller aln. och TK eller TM och TF = 1. 2. 3. 4. 6. 8. 12. 20. Åro widderna och bredderna KD, MN, FG swarande i ordning mot the förra / neml: 1. $\frac{2}{3}$. $\frac{1}{2}$. $\frac{2}{5}$. $\frac{2}{7}$. $\frac{2}{9}$. $\frac{2}{13}$. $\frac{2}{21}$. eller om $\frac{1}{2}$ mynningen TC är = $2\frac{1}{7}$ aln: och längderna / 1. 2. 3. 4. 6. 8. 12. 20. Åro Breddren emot them swarande $1\frac{1}{14}$. $\frac{25}{26}$. $\frac{25}{34}$. $\frac{25}{42}$. $\frac{35}{62}$. $\frac{55}{85}$. $\frac{25}{106}$. $\frac{5}{34}$. och så widare.

Then
Första opfodrings och omwäxlings
Machinen.

Nföres här twenne opfodrings Machiner wid Gruf-wor brukeliga / af hwilka then första har en förmon och större nytta än then senare therwtinnan / at ther med bespares bygnings medlen och mödan: ty man hafwer ther intet af nöden at fördubbla hiulen och spila them på tweggiehanda sätt: ej heller at hafwa dubbla rännor / och leda watnet på bägge bröstен och sidorna af hiulet / til at ther med wända om theß gång / når tunnorna böra wändas. så och dragas in här med then långa ledstången / som går gemenligen ändalångs med stora stånggången från grufschachtet til hiulhuset. Konsten består therwtinnan at alt thet som förr wid hiulet omwändes / thet wäxlar sig nu om mitt wti sielfwa Machinen / så at omwäxlingen är hardt wid Linorna / och at thet kan förrättas af then samma som har mödan för opfodringen. Tilfälle och anledning til en sådan mödo- och besparnings Machine är först gifwen af then sinrika och ganska subtiliga konsten / som wid Thalu-Måns Nils Grufwa ärnas i wercket at sätttias af

Wäl-

MACHINA Elevandi METALLA
in medio Versatilis:
inventa ab
Eman: Swedberg.
A
B
C
D
E
F
G
W

Tabula. 2.

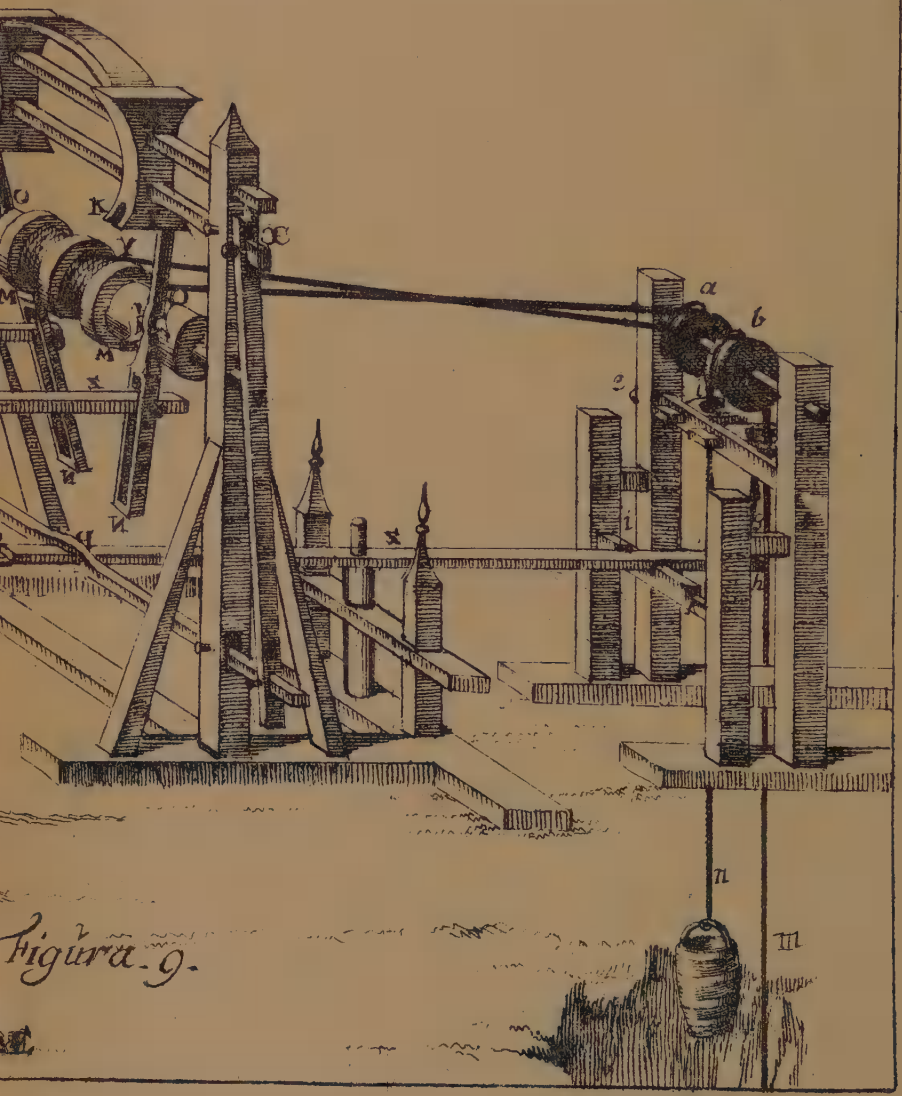
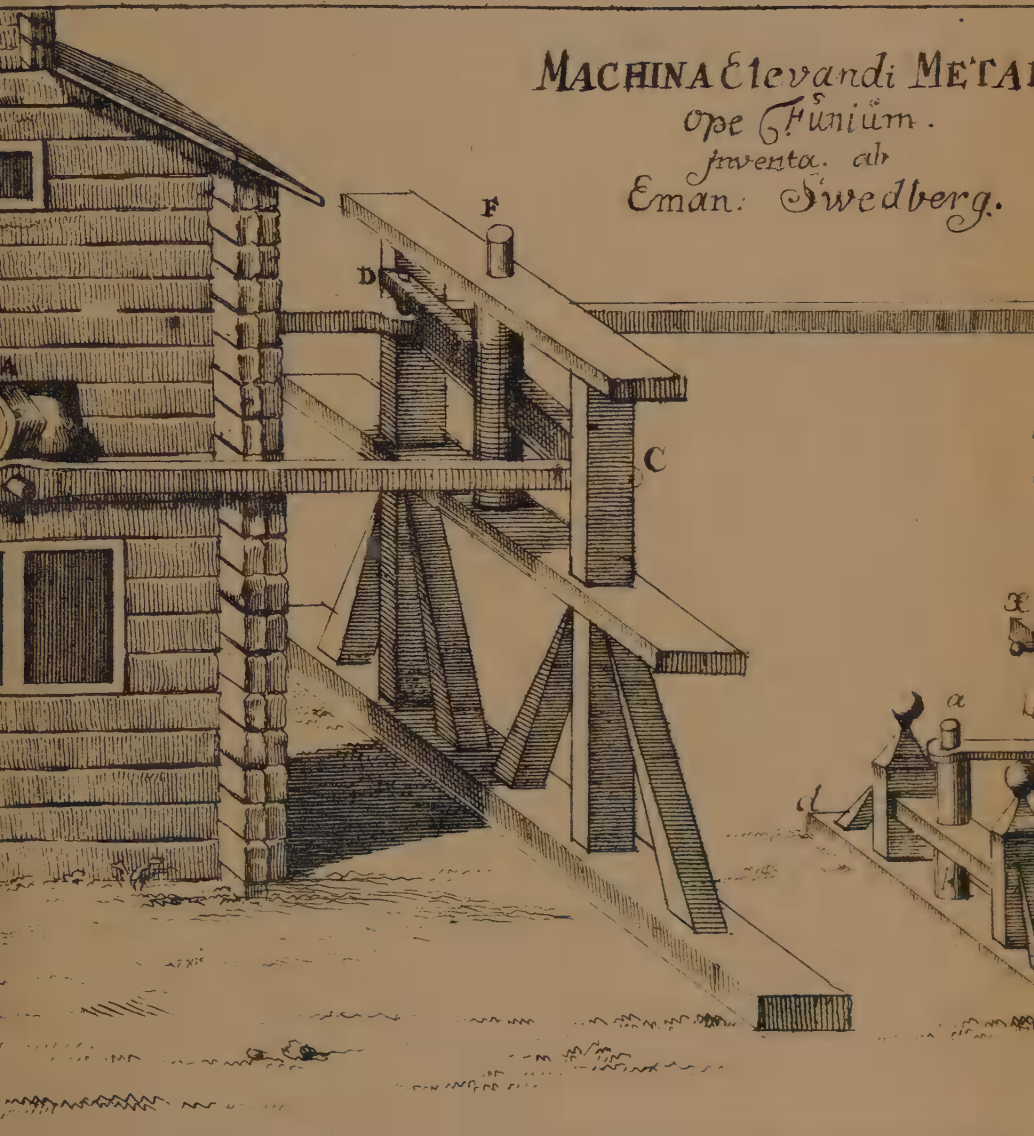
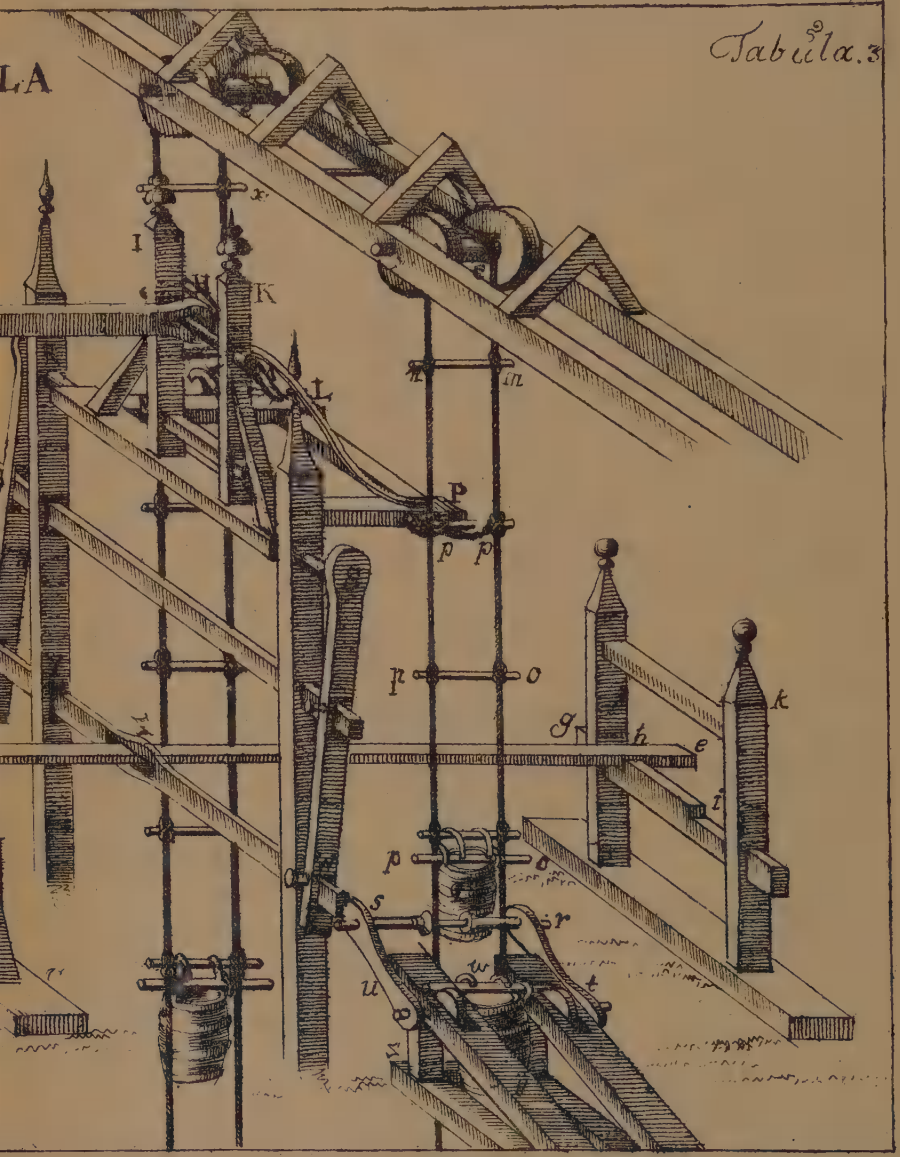


Figura. 9.


MACHINA Elevandi METAL
ope Funium.
Inventa. ab
Eman. Swedberg.
F
D
C
a

Tabula 3.



Wälborne Herr Assessor Polhammar. Skildnaden är allenast i konsten at wända om Tunnorna / fast begge hafwa enahanda bygd nembl. at repgånaen wänder sig om mitt uti / och trager på andra sidan sitt lopp genom en liten tilhielp och möda af then widstående; så at när tiden fordrar / går then upgångne tunnan ned och then nedgångne opföre igen / utan at hiulet tar ett annat omlopp.

Beskrifningen. 1. A Är Hiulhuset / hwars hiul har sitt lopp från eller til som lägenheten medgifwer. 2. B är hwefwen. C är hwefstången / D är stenen som hwefaruln ligger på: på andra sidan är osynbart then andra motswarande hwefwen / är satt twärt om med thenne; när thenna drager sin arm och sin stånggång / skuter then andra / och när thenna går öster ut går then andra wäster / och twartom / på thet machinen utan apskof må wara i sin gång. 3. CZ är sielfwa stånggången / som kan wara dubbel / enkel / så och förlengd i många leder och hwarf / gå up och neder / alt som orten / landmohn och watu-lägenheten är; hwilket här med en enckel stånggång för ögonen lemnas. 4. OMN Ärarmarna så rörlige genom hwefwens drecht / at tå en går fram / går then andra tilbakars: the äro och så giorda / at armstången som rör them kan settias i them högt och nedrigt / och i följe ther af sielfwa armen blifwer längre och stäckre / såsom man ärnar proportionera farten med tyngderna. 5. Then öfra delen af armarna går in uti en skura eller klyfte K, At theß bättre kunna hålla sig i sitt rum orörd til någon sida när omwärlings machinen föres af och an / eller när armen rörer sig: i the bemelte skuror äro och twenne siädrar. 6. Theße armar gå emellan twenne tagghiul som äro skilde wid paß $\frac{1}{4}$ eller $\frac{1}{5}$ aln / hwilka hiul äro likdelta / men hafwa fådt en annan taggwendning genom thet the äro

satte

satte emot hwar andra. 7. Armen ligger särskilt nedanföre wid BA, hwilken åfwan för sitt Centrum är wreden in åt / nedanföre är ut åt / på thet at theß bättre kunde lämpa sig i böjningarna och infallen i tagghiulen. CD äro the twenne siädrar / som böra wara i klyftorna KK 8. Y Är sielfwa repwaltzen / hwar wid repen så äro bundne och läncke / at thet ena går kring nedan före / thet andra ofwanföre per viam reciprocam. Och UO Är then Cylindren och axuln, hwar wid alla rullarna och waltzarna äro limade och fastnaglade.

Omwärlings Machinen. 1. XUS och TW äro twenne hengbielckar festade i X på sätt som gångiern / så at the äro rörlige til och ifrå ; så ock wid S och T. The hafwa och therjemte en fri gång genom inre stolparna. 2. Rih är en halfklufwen stock / som går igenom twerstocken ST uti Q : och har i Z en axul eller centrum, hwarom han wrides af och an. 3. Theß ända (ih) kan leggias i en af skurorna wid (i) elr (k) 4. wid (h) är en ked / hwars andra ända är fästad wid (c) 5. (fdc) äro twenna stubbar med klyften uti / hwar uti repen gå / hwilka sittia wid en tweerstock / som ligger på sina axlar wid f och e.

Bruket : 1. När hiulet röres omkring tillika med hwefwen / så komma ock armarna Mn, Mn tilgångs / then ena fram åt / then andra tilbakars / the ther hefta i skurorna P, och föra omkring repen : så at när thet ena tgår op / går thet andra ned. 2. Legger man longstocken hi ZR i en af skurorna / kommer therigenom SUX längre ut eller inåt / och sluter therjemte Cylindren UW til thenna eller then andra sidan / så at armarna komma therigenom at heffta i ett annat par tagghiul ; hwilka hafwa sina aggar på annat sätt satta än the andra / neml: at theſſa

gå til höger når the andre gå til wänster / hwarigenom och repgången blir omwexlad. 3. När tunnan kommer op och heftar i en af klyfftorna vti (i) / höja klyfftorna sig op och draga therjemte longstocken (hi) vr sin skura / och föran mitt vppå: hwilket giör at begge ärmarna gå mitt emellan tagghiulen / och föra tunnan hwarken op eller ned / vtan lemnar henna til at dragas neder wid någors anrörande: wore doch allenast til at märckia / at om man lemnar tunnan i sin fart op åt / tils hon lyftar sielft op styrstången / kunde befaras en liten Rasning / tils tunnan kommer til sin ort hon bör assettias; hwilken doch themna Machinen theß mindre är vnderkastad / som man fritt vtan fruchtan för rasning kan legga styrstongen från then ena skuran til then andra. Ty när hon är litet kommen öfwer brynen på Schachtet / omwäxlas styrstången / hwar af sker at hon longsamt befodras til sin behöriga lort: och sedan hon är kommen thit / föres stången mitt vppå / hwar af repen stanna / fast än Machinen är i gångs. Therföre om then som har at beställa wid opfodringen han förer ock så longstocken (hi) från then ena skuran til then andra / omwexlar sig therigenom gången; hwilket alt af ritningen bättre kan tagas: fast ther wid är försedt / at taggwändningen är giord åt en sida / som bör dock wara åt twenne. Man har ock thet igenom en simpel modell erfarit / och funnit thet så i wercket som i ritningen.

Hwad ellieſt omwäxlings Machinen angår som på sidorna är / kan then efter behag giöras / efter som thet intet fodras så stor potentia Mechanica at befodrat / helst som inga tyngder liggia ther på / vtan thet skufwas allena lätt af och an. Doch wore best at skufningen lättades til helften igenom Mechanichen, nembl om thet giöres at distantien emellan skurorna ki wore dubbel eller trippel emot distantien

emellan tagghiulen: nemligen distantien OP ware ½ aln / distantien XU til US ware dubbel / tå kan ZQ och Zh wara liklonga; så blifwer och distantien ik dubbel emot then emellan tagghiulen: eller giör man och en dubbel ration emellan Z Q och hZ, blifwer distantien ik 4 dubbel emot distantien emellan tagghiulen; thetta alt wore onödigt til räknings föra / som thet bäst utwiser sig i wercket: Ty såsom distantien emellan skurorne ki är til then emellan taghiulen / så blir och lindrigheten i rörelsen.

At finna armens lengd när theß angel tages efter behag: Armens förlängning och kortning tienar til at hielpa tyngderna lättare eller fortare op; therjämte observeres, at ju mindre diameter tagghiulen göres af / ju lättare befodras tyngderna op. Tagghiulen ware delte i 8 taggar / armen AE = a. Fig. 9. EF = b = med hwefwens längd. Sinus anguli EBF = m är therföre AEF (m): EF [a]: EFA (r): AE = $\frac{ar}{m}$

Arithmetice, tagghiulet ware delt i 8 taggar: therföre när angeln EAF tages för $\frac{45}{2}$ = 22½. Hwefwen EF = 5 qwarter / bör armen EA = $\frac{ra}{m}$ wara = 13 qvarter. 2. Är hwefwen 1. aln; hela angeln = 45: bör armen wara = 10 $\frac{2}{5}$ 3. Om hwefwen är ¾ aln är armen 2 alnar nästan / och giör tå wattuhiulet 4 hwarf / medan tagghiulen och repwältzarna giöra ett. **Eller** om Angeln blifwer 90. och 1. hwefwen ¼ aln. blir armen 7¼ qwarteer. 2 Är hwefwen en aln / blir armen 5 $\frac{23}{41}$. 3. Om hwefwen ¾ aln / blir armen 4$\frac{1}{5}$: och i theßa fallen går tagghiulen om ett hwarf mädan watthiulet twå. **Eller** om armen altid heftar i hwar tredie tagg / så at machinen går

går 3 gånger om når watnhiulet 4: Är förſt $\frac{1}{2}$ angeln EAF = $67\frac{1}{2}$. hwefwen = $\frac{5}{4}$ aln = EF. blir tå armen AE = $5\frac{1}{4\sigma}$. 2. Om hwefwen wore = 1 aln/ blir armen AE = $4\frac{19}{4\sigma}$ 3. om hwefwen är = 3. blir armen $3\frac{23}{42}$: faſt i mechaniken intet ſå noga kommer på $\frac{1}{2}$ qwarteer mehr/ hwilket bör leggas til.

2. **At finna the minſta längder och ſtörſta halfanglar/ ſom armarna kunna giöra.** Man ſupponerar altid tagghiulens Semidiem: en $\frac{1}{4}$ aln kortare än hwefwens. ware AE armen; Fig:9. AD och AC tagghiuletz Semid: AB then kortaſte längd på armen ſom kan wara; ſå finnes BAC när AC = b. BC = a = hwefwens längd/ ſå är $\overline{BA,}^{2} = \overline{AC}^{2} + \overline{BC}^{2} = aa + bb$. BAC finnes genom ſinus. BA: Rad:: BC: BAC = $\frac{2}{aa + bb}$: r:: C: $\frac{ra}{\frac{2}{aa + bb}}$

Arithmetice om hwefwen wore 5 qwarteer. Tagghiuletz Semid: = 4. bleſwe armens längd AB = $\frac{2}{aa + bb}$, $6\frac{1}{2}$ och angeln BCA = $\frac{2ar}{aa + bb}$ = 769232 ſinus = 50/ 17. eller om hwefwen wore = 4. tagghiuletz ſemid: = 3. wore armens minſta längd = $\frac{5^{2}}{4}$ = 5, och angeln BAC = $\frac{4x}{5}$ 800000 ſinus = 53/ 8. Eller/ om hwefwen wore $\frac{3}{4}$ aln. och hiuletz ſemid = 2, wore AB = $\frac{5^{2}aa}{3}$ = $3\frac{1}{2}$ fere. och ſinus anguli BAC = 857142 8 = 59.

Ellieſt om man wille at tunnorna ſkulle opfodras här igenom ſå fort ſom genom en Machine ſom beſtår af 4 hwefwar/ ſom ellieſt brukelig är/ kan man allenaſt öka Diametren på reprullarna: ty om armarna bifwa ſå länge/ at hwatnhiulet går 4 gånger om/ när tagghulen en/ fördrades 4 gånger ſtörre Semidiameter för reprullarna at hin-

na til then samma hastighet med en hwef-Machine; så ock om watnhiulet ginge 2 gånger om/ medan taggbiulen en/kunde reprullarna blifwa ökte til dubbelt: hwarigenom tunnorna befordas lika fort och lätt op/ som reprullarna skulle giora lika många hwarf med watnhiulet.

II.

Then andra opfodrings Konsten.

Then förra war för at lindra then omkostnaden som gemenligen erlägges wid sådana Machiners och opfodringars bygnader/ men som then ellieſt ingen widare nytta hafwer án then som ock andra-Machiner kunna skryta af/ ty wil man här en annan föredraga/ then man hoppas lärer inbringa sin omkostning/ och giöra then nytta som twánne af the wanliga.

1. Theß Hiulhus wises wid A, hwar til hwad falßwatn som tilfálle gifwes/ kan wara brukeligit: på hiulet áro twenne hwefwar/ hwilka begge löpa vti en arm nembl. C och D, och sedan i en stonggång/ hwilken går enkel eller dubbel til sielfwa Machinen. 2. Theß ánda H festar och kröker sig omkring en Jern-Cylindre M I. hwilken sitter emillan twenne armar som áro på en wendwallj eller wendtriangel P L. K I. 3. Wid wándwinckelns vnderarmar áro twánne starcka járnkrokar/ som på thenna sidan wid p p kröka sig vpföre/ och på andra sidan eller armen nedföre. 4. n m p o. Áro rep/ tog/ linor eller om behagas starcka járnkádior/ hwilka fördubblade áro til en wiß och jámnlik diſtance förmedelſt Jern-Cylindrar [n m] och [p p] och [o p]. Hwar wid tunnan

nan kan hakas således som ses. Theße dubblade linor äro hopbundne så at the gå continuerligt omkring och giöra en long oval rundel. 5. Omwäxlings Machinen är nästan som i then förra beskrifningen / allenast twerstocken WXYZ går fritt igenom inre stockarna Y och W, och är festad wid W och X: wid U och T äro the ock faste giorde litet stycke ifrån inre bielkarna på gångjärns wis. S och R äro the yttre ändarna som skufwa Wendwallen fram eller tilbakars; longstocken e h Z a, går igenom twerstocken Z, ock sätter sig på en axul vti a, hwaresf blifwer theß centrum: framföre wid (i) och (h) äro twänne skuror giorda som i förra. 6 [turs] är ther tunnan tages emot på / när then lämnas af sina linor / hwaresf [eu] och [t] äro twänne bielkar som slutta til en lagom angel af 30 eller 50. (t) (u) äro twenne halftrißor / som stå på ändas medan armen (rs) föres opföre / så at tunnan kan hänga beqwämligen stilla ther wid; och när armen drages åt sig / gifwa sig trißorna in i sitt rum / och tunnan skrider litet slutt vtföre: och om tå wore festad en ked vnder tunnan och wid en af stockarna / skulle hon hielpa sig omkul sielft wid nedsluttningen.

Bruket. 1. När hiulet är i gångs / drager armen sin Jern-Cylindre fram och tilbakars / och i följe theraf wändwallen op och ned / med sina armar P och L. 2. krokarna p p lyfta repen op i sin opgång; och the andra krokarna fästade wid Q. draga the samma repen neder i sin nedgång / ty distantierna äro så proportionerade at the altid komma at häfta. 3. På thenna sidan komma tunnorna opföre / eller 3 eller 4 i rad / alt som Machinen tohl / på andra sidan gå the nedföre / så tätt och kringt som fodras / med wed och annat fylle. 4. När repen gå

omkring öfwer rullarna e och e, gå the sedan ned åt af sin egen tyngd / och böra the lämna emellan sig ett litet wackert spatium, så stort som Schachtet medgier / på thet the intet måga stöta tilhopa i farten. 5. När som longstocken ehZa legges i en annan skura / skufwes then dubbla wändwallen bättre bort eller hit; neml. om (e) sättes til (i) stutes (XW) bort åt / hwaraf sker at intet krokarna komma at hefta an på en sida / utan repet går nu ett stycke op nu thet samma neder igen med tunnan / efter som kroken hakar allenast på ett jern. 6 Hwarigenom begwämligen sker at tunnan kan sättias från sin rep / på then lilla yndra Machinen (tu.) thit then med handen lätt kan befodras / tils then sielf sig affsätter.

Är theföre nyttan / at härigenom kan opfodras 3 a 4 Tunnor i rad efter hwar andra / och med samma omak skickas tilbakars: och at tå tunnan kommer op åt at mottagas af then yndra lilla Machinen, lägges longstocken i en skura / hwar igenom repgången går af och an och affsätter sielft sin tyngd med en liten handhielp. Är och thetta erfarit i model, hwar uti thet sig wiser som i beskrifningen säjes / warder therföre lemnad til fleras omdöme.

Nu efter som genom thenna Machinen skal upfodras 3 a 4 tunnor i ordnings / ty bör Mechaniken hielpa til at Machinen rår ther med / hwilket kan giöras om wändwinkelns öfra armar K och I giöres längre än the nedra P och L ; och i fölie ther af distantierna på jernen emellan repen : neml. om armens K längd wore til armens P som 5 til 3. worte tyngderna therigenom och lättade som 5 til 3 : och distantierna emellan jernen blefwo och minskade som 5 til 3 / hastigheten och i samma proportion. 2. Men thet at yndgå wore bäst at man förer thenna

Mecha-

Mechaniſka lindringen på hiulet förmedelſt theß tilökning til 22 a 24 alnars diameter.

Diſtantierna emellan jern-Cylindrarna ſom ſittia emellan repen / böra wara dubbla emot hwefwens längd; ſå at om hwefwen wore 5 qvarter, blefwo diſtantierna 10. men om wàntriangelns öfre arm K til then nedre P wore ſom 5 til 3: wore och dubbla hwefwens längd til diſtantierna ſom 5 til 3: och om öfre armen til then nedra wore ſom 3 til 5; blefwo och diſtantierna ökte emellan jernen ſom 3 til 5. faſt i ſådana Mechaniſka wärck then ſtörſta accurateſſe wore thet ſtörſta förſeende.

Bör och noga i acht tagas längderna på repen ofwanför krokarna; Hwilka böra paßas ſå at når thet ena paret har heftat i / at thet andra gier ſig ifrån: therföre komma intet krokarna at ſättias paralelt eller jemnſidigt emot hwar andra / utan the på then ena ſidan högre op / the på then andra lägre ned.

II.

DÆDALUS HYPERBOREUS

Eller

MATHEMATISKA och PHYSICALISKA

Försök

och

Anmerckningar

För April Månad 1716.

beskrifna

af

Emanuel Swedberg.

Upsala /

Hos Kongl. Maj:ts och Acad. Boktryckaren

JOH. HENR. WERNER. 1716.

Machina Nova

Metalla longe facilius, et minore sumtu ex Metallorum fodi
ceteris omnibus, quibus usi sunt antea in aerifodinis commodior
sanibus non nisi ligno sit instructa, auctoritate et sumtibus
Aerifodinæ Fahlunensi (:Stora Kopparberget:) imposita, cuius
CHRISTOPH: POLHAMMAR Math.s et Mechan.i studiosus.

Sam: Buschenfeldt delineavit.

Amstel

Significatio Notar:

A. Rota aquaria, cuius diameter 30 ped: ſve:

B. Axis Rotæ cum tympão b, duor: ord: paxillis diſtincto.

C. Rota, transverſim dentata et tympano b applicata.

D. Axis eiusdem cum Manubrio verſatile quod perticam E brachiis F annexam ultro citroq; movet.

G. 2 Volvuli cum brachiis I, quibus perticæ H impenſæ ſunt, quæ ſurſum et deorſum moventur.

H. 4 perticæ pendentes, ſingula ſuper 200 ped: longa et 15 uncis ferreis diſtincta, quæ viciſim urnas gradat: attollūt

K. 2 Vectes uncati, qui Urnam apprehendunt, et ope catenulæ L, ſpōte metallum extractum effundunt.

M. Catena perennis ſuper rotulam N pendens, & 30 globulis diviſa, cui, urnæ evacuatæ ad deſcenſum impenduntur.

O. 2 furcæ ferreæ, quæ alternatim globulos arripiendo ac dimittendo catenam urnis gravatam lento gradu retardent, et æquilibrium urnarum acquirunt.

P. Ponticulus, qui carrum onerratum ſublevat, propter acclivem viam

Q. Tubus ex quo aqua emittitur ad mövendam rotam.

Effectus huius Machinæ ad earum quibus uſi ſunt, rationē habet extrahendi, ut 11 ad 8, manente eodem tempore, vi motrici, et profunditate fodinæ.

J: van Vianen Sculpſit.

Assess. Chr. Polhammars Upfodrings Konst wid Blanckstöten.

Om Berg-Wercken i Swerige äro theß förnemsta rikedomar och likasom theß Skattkammare / hwilket står öpit så i fridz- som krigz-tider at tilgå; ty the intet brista / när doch alla andra medel brista och oß athendas: ty åligger ock hwar och en at anwända sina tanckar therpå / at the befodras och winna alt större och större förmohn och förkofring. Nu som theßa Skatter ligga nog diupt neder och aiömde i hårdesta berg / ty fodras mongas och helst mechaniquens tilhielp at befodra them alt med mindre och mindre omak och tidsutlan / och i större myckenhet fram / och i följe ther af åtniuta them til wår större fördehl och nytta i lengden. Nu som wår Swenske Archimedes Ch. Polhammar wid thylikt har wisat sin konst och inrikhet / ty wele wi til ett exempel först andraga then förste Hans upfodrings konst wid Blanckstöten i Fahlun inrettad / och sedan wid tilfellen andra Theß Machiner her och ther i Swerige anlagda / at gifwa therigenom anledning til flera thyhka.

Beskrifningen. A är stelfwa hiulet som har sitt hiulhus omkring sig: Hiuletz diameter är 15 alnar / och omföres af watn som kommer strömmandes ned och sedan upföre genom trummor. Och som hiuletz diameter intet skulle giöra tilfyllest mot watnet och tyngdren til upfodringen / ty äro twenne andra smerre Hiul satta utanföre / nemligen B ett Cylinder-hiul / och C ett Kugghiul / hwilckas ration sins emellan giör at watnet rår med at omföra thet

ſtörre. Theſſa ſmerre hiulen hafwa twenne radar eller delningar af cylindrar och kuggar/ the ther gióra nog til thes richtighet i omförander. 2 Bakom kugghiulet C är en guten jernhwef/ hwarmedelſt Stong-gången och kånſten komer i rörelſe. 3. Wid (E thet andra i ordningen) äro tre ſtenger; the twå yttre äro för then öfra Wendwallen (I); och then midlerſta för then wndra. 4. I och G äro twenne wändwallar ſtelta på quadratwis emot hwarandra; hwaraf ſker at när ſtong-gången förer them begge fram eller tilbakars/ at the yttre armarna gå korßwis från och emot hwarandra: ſå at när hwefwen ſkiuter til/ lyfta the öfre ſig wp och the wndre ſencka ſig ned; men drages hwefwen/ ſtonga the tilſamans korßwis. 5. Theſſa twenne yttre armar äro hophakade och ſammanlenckte hwarthera wid the twenne ſtengren H. H. hwilka föres op och ned lika med theſſa armar; nemligen/ när twenne gå opföre/ gå the andre twenne nedföre/ och ſå omwexlingswis alla hwarfwen. Stengrens längd är 100 alnar lika med diupet til förſta botnen på grufwan. 6. Hafwande hwar ſtong 15 krokar; warande diſtantien emellan hwar krok 13 a 14 fot/ hwarpå tunnorna ſettes ſom ſkola opfodras neml. til 2 a 3/ til 70 a 80 fots diſtance emellan. 7. Nar nu ſtengren gå wp och ned emot hwarandra/ är klart at när thet ena ſtongparetz krokar går wpföre går thet andras nedföre/ halfwa wägen hwardera: och ſedan krokarna ſins emellan mötes/ omſkifta ſtengren ſin gång/ ſå at thet andra ſtongparetz krokar taga wid ſamma tunna och befodran 6 a 7 fot högre wp/ och wid omſkiftningen ther kommer åter tunnan på ſitt förra ſtongpar och ſå widare tils hon är opfodrad til ſin behöriga ort. 8. Straxt när tunnan är kommen wpföre berget/ är en verticale wägbalck eller wändwall K med krokar på endan/ hwilken föres tunnan til mötes och lyftar henna från ſina krokar af/ in åt: hakas ock ſtraxt på en jernked wnder tunnan/ hwarigenom hon ſtielper ſig omkull

full och utan möda uthtömer sig malmen. 9. Sedan befodras samma tunna på en jernked at senckas ned igen: på thenna jernkeden äro 30 Jernäplen til samma distance satte som krokarne på stengren / hwarwid tunnorna festas. (oo) är balancen eller jemnwichten som går up och ner lika med then undra wändwallen G, hwarwid then är satter: thenna balancen (oo) har ock twenne krokar och klyfften / en på hwar sida / som jemka sig under och upöfwer jernäplena och föra thermed keden på behörigt wis omkring. 10. Nu som jordmohn wid Hiulhuset är litet högre än then wid opfodringsrumet / skulle thet them falla beswärligit / som hade i beställning at skiuta malmen therifrån: hwilket ock är förekommit förmedelst en bordskifwa eller wåg wid P; hwilken lyftar sig up och ned / som theß wendwall / hwarpå karlen steller sig tillika med sin kerra och malmbår och låter sig uplyftas tils han kommer i lika högd med Hiulhuset / då han skiuter malmkerran efter spången med mindre möda och tidspillan än ellieſt fodrades.

Nyttan af thetta wercket är thenna: at utom thet theß effect är öfwer 50 procento större än the gambla wanliga wärcken / ner man considererar lika watudräckt / lika tijd / och lika diup af grufwan / helst ner twenne hälljor tillika / dock efter hwarandra updragas. Widare bespares ock the kostsamma Läderlijnor som ther brukas / eller Hamplijnor / som ej lenge durera, igenom theßa trästenger / hwilcka kosta ansenligen mindre än sådane lijnor / och däck synnas kunna hälla wel 50 a 100 resor längre tijd / som af the redan 23 åhrs stadiga prof kan slutas.

Att finna Krokarnas distance och skilsmåhl på the verticala Stengren: Hwilken skilsmåhl är fyradubbel emot hwefwens längd: nemligen / om hwefwen wore 4 quarter, moste distantien emellan hwar och en bliſwa 4 alnar: om 5 quarter, moste distantien bliſwa 5 alnar:

men förbehälles/ at wendwallarna äro lika stora och hafwa lika armar; ellieſt ändras proportionen ſom armarna. **Haſtigheten/ Tyngden** och **Tijden** kunna ock paßas efter hiuletz drecht och watnets fall och anlopp: nemligen/ när man har watnetz fall och haſtighet/ hwilcken är lika med then haſtighet ſom hiuletz omkretz giör; ſamt om man wet proportionen emellan the twå ſmerre hiulen/ lärer ſedan uträkningen falla them lett ſom i mechanicis någon kunſkap hafwa. Som til exempel, när watnet faller af ſådan högd/ at thet löper ſedekmehra 25 fot om en minut. ſec. eller 1500 fot om en min. pr. om tå hiuletz diameter wore 15 alnar/ eller theß omkretz 47 1/7/ tå giorde hiulet näſtan 32 huarf eller omlopp om minuten; men ſom rationen emellan the begge ſmerre hiulen/ at thet går ännu ſachtare/ och at hiulet rär med konſten: theras diametrer ware ſom 2 til 3/ ty giör kugghiulet eller hweſwen/ ſom therwid är feſtad/ 2 1/3 hwarf/ när thet ſtora hiulet giör 32. Til then ſamma proportion blifwer ock haſtigheten i hela konſten minſkad och tyngden lettad.

Profeſſorens/ Doct. L. R. tanckar om Salts tilwerkande i Nordländerne.

DEt kiöld ſkiljer Salt och Watn åt/ thet ſee wi dageligen wid Apothekarnes criſtalliſationer/ eller anſkiutningar. Thet ſömnimme wi ock af wåre Skärkarlars erfarenhet/ ſom weta thet/ at iſs af ſaltſiön til ett friſkare watn optijnar än thet war förr än thet kiälades. Men när man hör med tanckarna efterhänger/ ſå följer theraf/ at een iſslegning ſkäfwetals gående öfwer en heel damm til exempel med ſalte-watn/ och ther af tagen hwar gång emellan/ bör con-

concentrera / samla och drifwa ihop hela massans sälta / uti ett mindre volum / och rum / och sallakan genom ett så lett och kostlöst medell bringas ther til / at thet lönar mödan spendera weed och siudning derpå. Hwilket experiment eller sanningz-rön i sanning wärdt an ofta at eftertänka / för Swerjes fälk i synnerhet: watandes en ibland theße länders naturlige laster at salt behöfwes / uselheter at thet tryter / olyckor / at fienderne / när the willa / thet förneka och oß jemwäl härigenom kutwa kunna. I the heta länderne tilwerkas saltet genom soolwarman / som siölakan utkokar. På några orter har man the så kallade Läckwerken anstält / therigenom blåswädret och weftningen watnet til en deel ifrån lakan skiljes. At gräfwa saltet blir ingen swårhet / när man thet först finner. At koka in wårt siöwatn så swagt som thet är / blir för kostsamt / sedan numehra all möjelig wedsparning wid Swenske hushållen nödwendig blefwen. Genom frost och blåst wore wäl lätraft / allenaft thet ock wäl anginge / thet tiden lära kan. Leonh. Thurneyßer tror thet i sin I. Book von art der Wasser p. 7. Es möchte vielleicht einer dieße „Kunst zu erfinden dem menschlichen Geschlecht zu güthe „von GOTT verordnet sein / den man soll nichts gar ver„werffen. I medlertijd är wist och sant / at ijs af saltwatn eij så salt är som watnet ther then blef utaf. Och at siöwatn / sedan en deel theraf til ijs är blefwen / är ther igenom saltare wordet än thet förr war. Om hwilket letteligen hwar en sig förwissad giöra kan / ther han wintertijd salt i watn smälter / för och efter frysningen genom wicht / smak och sänke-proof försöker. Ellieft har jag åtskillige saltslag smelt i watn / låtit droppetals för ögonen kiälas på en glaasskifwa och theras särskilte art af kalning betrachtat / hwaraf härnäst några afteckningar öfwersända wil; tienande i synnerhet thetta til uplysning af många malmarter samt andre injordiske tings tilwerkning och binde / och thet utan några figure-

figurerade præexisterande ämnen / allenast af elementernes blandning doch i sitt wissa mått / rum / och wicht hwarefter Naturen all ting förrättar. Thetta vppå begäran thenne gangen.

Experimenter som kunna werkstellas i wintertiden / förmedelst wår Swenska Kölд / gifne af åtskilliga wid handen.

1. Wore merckwerdigt at weta huru diupt watnet kan tilfryſa i wåra Nordiſla Lender / om ock thervti är en wiß högd och ett wiſt diup / ſom fryſningen kan ſtiga til. Ty giöre man ſig ett koppar- eller bleck-rör aldeles wädertett / tillödet med falß och tennlödning ; bör wara några 20 alnar longt / hwilcket fylles med friſkt watn / reſes ända / och vti kalleſta winteren vtelemnas / til at ther med ſe / om thet är möjeligit at watnet kan fryſa til ſtörre diup än til 17 alnar vnaefär / nemligen ſå högt ſom wädertryckningen ſker i pumpar och häfrar

2. Kunde ock noga tilſes / huru ſamma watn bär ſig åt i fryſningen / när watnet eller röret ofwan til ſtår öpit eller tept ; eller när thet teppes til med en träplugg eller med ett kopparſprund tillödt.

3. Kunde ock förmerckas i ſtarckeſta kölden huru tiock iſen är ; om ther är jemntiockt / taſt watnet är diupt eller grundt / eller huru ſtor åtſkilnad ther vtwiſer.

4. Som thet förmerckes wid en kölд / at iſen ſpricker och ſiunker ned diupare / hwilket af iſen wid landet klarligen kan ſees / hwareſt iſen ofta ligger ſlutt och högre op än ſielfwa ſiöiſen : wore therföre werdt och nöjſamt at weta / huru mycket then ſamma iſen legger eller höier ſig när winteren ſtiger eller faller til ſin wiſſa grad i thermometern ; hwar af

af sedan monga nyttigheter kunde hemptas / samt gifwas tilkenna thet söta watnets sammantryckning / så ock theß myckenhet och diup.

Theßa och andra experimenter kunde befodras til at blifwa werkstelte bettre i Swerige än på någon annan ort i werlden; ty skulle någon hafwa then curiositet at giöra therpå försök och thet sedan wid handen gifwa / skulle thet lenda så honom til heder som androm til nytta och nöje.

Behendigt sett at räkna Intereſſen på Intereſſen, af Aſſeſſor Polhammar wid handen gifwit.

Att giöra försök på mechaniskt eller geometriskt sett at weta Intereſſens Intereſſe och thet påökta Capitalet efter monga åhrs förlopp / har sin största nytta när them / som hafwa monga summor åhr från åhr at inräkna på sina behöriga intereſſen, hwilcka om man altid arithmetice skulle efterräkna / skulle thet så beswärligit falla som i owißhet stanna / thereſt man icke hade wid handen en tafla för thy mähl giorder: doch som man altid har af nöden at beprófwa om monga åhrs intereſſen äro enliga med taflans eller sin egen uträkning / ty har man welat andraga ett lett sett / hwarigenom thet geometrice kan utletas.

1. Giör man sig en triangel, Fig. I. eller en simpel linea som a b, och setter Capitalet från lineen a til b, och theß anhöriga intereſſe från b til l winckelrett med Capital-lineen a b; och drager man sedan från l til c en annan linea, som bör falla winckelrett från a l: drages sedan från c til m: från m til d: från d til n: från n til e, &c. så monga man behagar / doch alla parallelt eller jemnsidigt med the förra twenne l b och l c: så är förſta.

sta åhreß intereſſe lika stort med linien l b; thet andra med m c; thet tredie med n d, &c. Intereſſens interesse år andra åhret likt med b c; tredie med c d; fierde med d e och så widare / thet år altid tilökta med the vtlupna åhrens intereſſens intereſſe. Hela summan tillika med sina tilhöriga intereſſen år första åhret lika mycket med a b + l b. Andra åhret a c + m c. Tredie åhret a d + n d. Fierde a e + o e: Hwilka summor om man åstundar weta / tager man the samme lineer med en cirkel, och settern på samma scala eller mätstock som thet första Capitalet a b år aftagit; så har man i lika delar thet som åstundades.

Bewis. Som b a l c åro twenne rätwinklade trianglar, följer at theras egenskap år / at b l år media proportionalis emellan a b och b c, thet år a b: b l:: b l:: b c. eller som Capitalet a b: til intereſſet l b:: så intereſſet l b:: til sitt Intereſſe b c. När så första Capitalet tilökas med b c, blifwer nya Capitalet lika med a c: theß intereſſen följa efter proportions reglorna; nemligen / som första Capitalet a b: til sitt intereſſe l b:: så andre Capitalet a c:: til sitt intereſſe m c. Och sedan når Intereſſets m c intereſſe år lika stort med c d; blir thet tredie Capitalet likt med a d; och så widare.

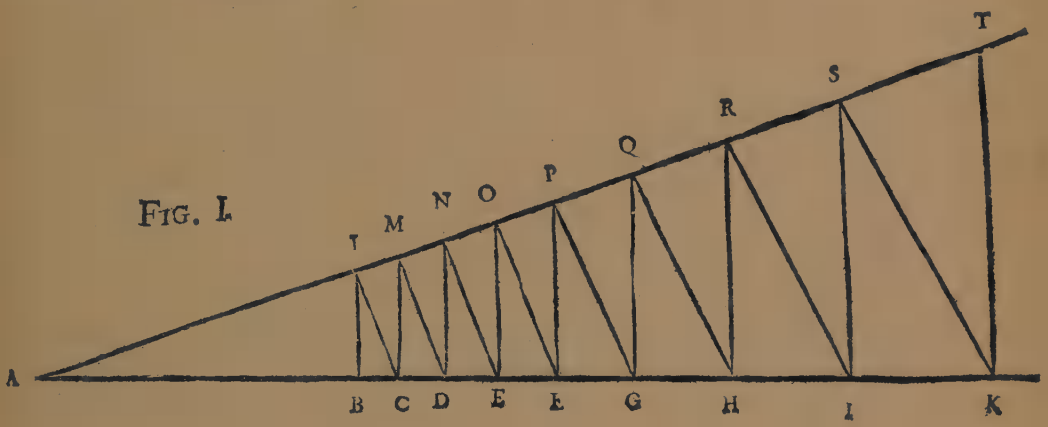
Efter samma trianglars egenskap / kan och a c settas i stellet för Capitalet; a l för Intereſſet; så blifwer a b Intereſſets intereſſe. Eller om a c settes för Capitalet, l c för intereſſet, blifwer b c intereſſets intereſſe. Ty a l år media proportionalis emellan a b och a c; så och l c år media proportionalis emellan a c och b c.

Kunde och i anledning af en sådan triangel förfärdigas ett instrument, hwarigenom kan eftersees / och thet i ett ögnableck / the Capitalen och intereſſen som på monga åhr i the andra influtne åro; hwilket wid annat tilfelle skal Läsaren til tienst lemnas. Är och thet til merckande / at thet torde falla wigare bruka circel-bågar i stellet för hwarannan twär- eller transvers linea.

Tafla

hörer til den 32 paginam.

FIG. I.



TAFLA

Hwarmedelſt Caroliners wärde i Dal. Kopp mt/ Silfmt och Rikſdaler uthräknas. Carolinen beräknad til 25 Styfwer.

Carolin giör	Dal. Kop. öre	Dal. Silfmt ſtyf.	Rikzdaler ſtyf.
1	2 - 11	25	- 25
2	4 - 22	1 - 18	- 50
3	7 - 1	2 - 11	1 - 11
4	9 - 12	3 - 4	1 - 36
5	11 - 23	3 - 29	1 - 61
6	14 - 2	4 - 22	2 - 22
7	16 - 13	5 - 15	2 - 47
8	18 - 24	6 - 8	3 - 8
9	21 - 3	7 - 1	3 - 33
10	23 - 14	7 - 26	3 - 58
20	46 - 28	15 - 20	7 - 52
30	70 - 10	23 - 14	11 - 46
40	93 - 24	31 - 8	15 - 40
50	117 - 6	39 - 2	19 - 34
60	140 - 20	46 - 28	23 - 28
70	164 - 2	54 - 22	27 - 22
80	187 - 16	62 - 16	31 - 16
90	210 - 30	70 - 10	35 - 10
100	134 - 12	78 - 4	39 - 4
200	468 - 24	156 - 8	78 - 8
300	703 - 4	234 - 12	117 - 12
400	937 - 16	312 - 16	156 - 16
500	1171 - 28	390 - 20	195 - 20
600	1406 - 8	468 - 24	234 - 24
700	1640 - 20	546 - 28	273 - 28
800	1875 - -	625 - -	312 - 32
900	2109 - 12	703 - 4	351 - 36
1000	2343 - 24	781 - 8	390 - 40

Taflans bruk: När man har en summa bestående af Caroliner, then man åstundar weta i Daler Kopp. &c. tages thet behöriga 1000:de tahlet / och 100:de och 10:de / och enckla som fodras ther til / och sammanlegges / så har man then åstundade reckningen i thet mynt man behöfwer: som til exempel, 1523 Caroliner til daler kopp:m. tages therföre af första columnen then summan i dal. kopp. som swarar mot 1000/ mot 500/ mot 20/ mot 3: och adderar them; nemligen: 2343: 24. + 1171: 28. + 46: 28. + 7: 1. blifwer 3569: 17: daler kopp:mt. Eller man wil weta Carolin-tahlet i daler silf:mt / brukas andra raden: til exempel, 439 Carol. tages therföre ur andra columnen the tahlen som swara mot 400/ mot 30/ mot 9: nemligen: 312: 16. + 23: 14. + 7: 1. Hwilka tilsammans giöra 342: 31 dal. silf:mt. Man kunde wel taflan ännu kortare framställa / som en del af thessa föreställta tahlen inbegripas i andra föregående; men som therwid fodras mehr adderning / ty gier man wid handen thet letteſta.

Ett annat behendigt maneer at bringa Carolin tahlen (Carolinen beräknad til 25 styfwer) i hwad sort af penningar/ man helst behagar/ igenom halfwering. Jemwel författadt af Emanuel Svedberg.

Hereſt man icke hade wid handen en sådan tafla at therigenom få weta Carolin-tahlens wärde i annat/ wore man nödgad at bruka regulam proportionis, hwilcken skulle falla för mödosam och beswerlig för Handelsmän och them som hade af nöden från- och til-räkna sig summor stundeligen; ty har man warit betenckt at förekomma thet genom andra lättare methoder, som ske allenaſt genom halfwering. Nemligen: 1. Caro-

1. Caroliner i Daler Kopparmynt.

Först halfweres Carolin-tahlet 5 gonger i rad; then tredie och fierde numern tagas twå gånger / och adderes så tilsammans: så får man theraf daler kopp:mt. Nemligen/ 800 halfweres til 400/ och thet

Caroliner				Annat exempel.
	† 800	1		1652
	† 400	2		826
	† 200	3		413
	† 200			413
	† 100	4		206 ß 16
	† 100			206 ß 16
	† 50	5		103 ß 8
	† 25	6		51 ß 20
Summa	1875 Dl. Kopp.			3871 ß 28 ör. D. K

til 200/ och thet igen til 100/ och så 5 gonger i rad/ at tahlen blifwa 6. Thet tredie och fierde tahlet/ nemligen 200 och 100 tages twå gongor och adderes sedan alla/ så kommer 1875 dal. kopp:mt therwt. Thet achtes/ at når 1 kommer at delas i ½ blir 16 öre; i ¼ blir 8 öre kopp:mt; ty en daler håller 32 öre. som sees af det andra exemplet.

2. Caroliner i Daler Silfwermynt.

Man halfwerar Carolin-tahlet 5 gånger i rad/ som thet förra: och lägger tilsammans thet andra/ tredie och siette tahlen/ så har man Dal. silf:mt. nemligen 800 halfweras til 400/ til 200/ til 100 &c. Tages thet andra/ tredie och sidsta antahlen/ nemligen 400 † 200 † 25 och adderes, så har man 625

Carolin.	800	1	1652	
	† 400	2	† 826	
	† 200	3	† 413	
	100	4	206 ⁄ 16	styf.
	50	5	103 ⁄ 8	st.
	† 25	6	† 51 ⁄ 20	st.
Summa	625 D. S:mt.		1290 ⁄ 20	st. Silf:mt.

daler silf:mt. Om 1 kommer at delas blifwer öre silfwermynt eller styfrar theraf; neml ½ giör 16 styf. ¼ giör 8 styf. ty en daler silf:mt innehåller 32 styf.

3. Daler Caroliner i Daler Silfwermynt.

Halfweres 4 gånger i rad; then första/andra och femte numern adderes: som til exempel 800 halfweres til 400/ 200/ 100/ 50: och then förste/

Dal. Carol.	† 800	1	† 1652	
	† 400	2	† 826	
	200	3	413	
	100	4	206 ⁄ 16	st.
	† 50	5	† 103 ⁄ 8	st.
Summa	1250 D. S:mt.		1761 ⁄ 24	ö. Smt.

andre/ femte eller 800 † 400 † 50 adderes, så har man 1250 daler silf:mynt. Om 1 kommer at delas uti ½ blir thet 16 styf. uti ¼ blir thet 8 styfwer; ty en daler silf:mt innehåller 32 styfwer. Wil man weta Daler Caroliner i Daler Kopp:mt. giöres först som nu sagt är/ och sedan tripleras.

4. Ca-

4. Carolin-tahlen i Sexmarcks-Plåtar.

Man giöre här som med Daler Carolinerna: nemligen/ man halfwerar ſumman 4 gånger i rad/ och legger tilſammans then 1/ 2/ och 5 numern: ſom 800 † 400 † 50 giör 1350 Sexmarcks-Plåtar:

Caroliner	† 800	1	† 1652	
	† 400	2	† 826	
	200	3	413	
	100	4	206	= 8 ſt.
	† 50	5	† 103	= 4 ſt.
Summa	1350	SexM. Pl.	2581	SexM. Pl.

När 1 halfweras/ blifwer thet 8 ſtyfwer/ när ¼ delas/ blir thet 4 ſtyfwer/ ty en hel eller en Sexmarcks Plåt giör 16 ſtyfwer.

5. Thet gamla Carolin-wärdet i thet nya.

Man halfwerar allenaſt gamla Carolin-tahlet twå gånger i rad/ och adderar thet förſta och ſiſta:

Carol.	† 800	1	† 1652	
	400	-	826	
	† 200	3	† 413	
Summa	1000	Carol.	2065	Carol. a 25 ſtyf.

nemligen / 800 † 200 giöra tilſammans 1000 Caroliner à 20 ſtyfwer; när ſom 1 halfweras här/ blifwer thet 12 ½ ſtyfwer: en ½ blifwer 6 ¼ ſtyfwer; ty en Carolin håller 25 ſtyfwer.

6. Caro-

6. Caroliner til Rikzdaler.

När Rikzdalern håller 6 Dal. Kopp:mt / halfwerar man Carolin-ſumman 6 gånger i rad/ och adderar tilhopa thet 3:die/ 4:de/ och 7:de tahlen: neml:

Caroliner 800	1	1652
400	2	826
† 200	3	† 413
† 100	4	† 206 = 32 ſtyf.
50	5	103 = 16 ſt.
25	6	51 = 40 ſt.
† 12=32 ſt.	7	† 25 = 52 ſt.
Summa 312=32 ſt. R. Dr.		645 = 20 ſt. RikzD.

Thet är/ när ſumman 800 är halfwerad 6 gånger/ ända til hon blir 12: 32 ſtyfwer / legges 200 † 100 † 12=32 ſtyf. tilhopa / nemligen then tredie / fierde och 7:de halftahlen; blifwer ſumman 312 ½ Rikzdaler. När 1 kommer at delas vti ½ eller ¼/ blifwer thet 32 och 16 ſtyfwer af: ty en Rikzdaler håller 64 ſtyfwer.

7. Caroliner i Nije-Dalers Plåtar.

Carolin-ſumman halfweras 5 gånger/ och then femte delas med 3 / thes ⅓ del ſettes til: adderas ſå then tredie och ſiunde numern: nemligen när 800 är halfwerad 5 gånger tils 25: divideras 25 med 3: blir 8 ⅓; thet legges til/ ſå blir af 200 † 8 • 3 daler Summan 208 Niedalersplåtar och 3 daler Kopp:mt.

Carol.	800	1	1652	
	400	2	286	
†	200	3	† 413	
	100	4	206 ≈	$4\frac{1}{2}$
	50	5	103 ≈	$2\frac{1}{4}$
	25	6	51 ≈	$1\frac{1}{8}$
	† 8 3:dal.	7	† 17 ≈ 12 öre	
Suma	208 ≈ 3 dl. 9dalers plåt.		430 9dal. plåt.	

Kopp:mt. När 1 kommer at delas i $\frac{1}{2}$ blir theraf $4\frac{1}{2}$ daler kopp:mt / vti $\frac{1}{4}$ blir $2\frac{1}{4}$ daler kopp:mt: ty en sådan plåt håller 9 daler. At kunna theß behendigare legga tilsammans the tahlen som böra / wore best man strax öfwersirykte med pennan the onödiga/ och behölt/ til at adderas, the nödiga.

Solens stora Förmörkelse som åhr 1715 den 22 April sig tildrog / blef på följande sätt observerad i Upsala af Math. Profess. Johan Vallerius.

Tiden när Förmörkelsen begynntes / warade och lycktades.	Solens högd och Månens Storlek observerade.	Thermometerns stigande och fallande.	Barometerns fallande.
Förmörkelens begynnelse / // Kl. 9/ 47/ 50	Solens högd o / // 39/ 36/ 42	458	29-45
Solen aldeles förmörkad / // Kl. 10/ 58/ 15	o / // 44/ 17/ 29	483 524	
Mitt i störste Förmörkelsen / // Kl. 11/ 0/ 19½	Månens / // storlek 33, 38	647 653	29-42
Solen börjar först lysa / // Kl. 11/ 2/ 24	o / // 44/ 29/ 13	656 633	
Förmörkelsen ändas / // Kl. 11/ 55/ 40	o / // 45/ 42/ 6	567 403	29-31
		315	
Hela Förmörkelsen ifrån begynnelsen til ändan - - -	2 tijmar 7 minut. och 50 sec.		
Solen war aldeles förmörkat - -	uthi 4 minuter och 9 sec.		

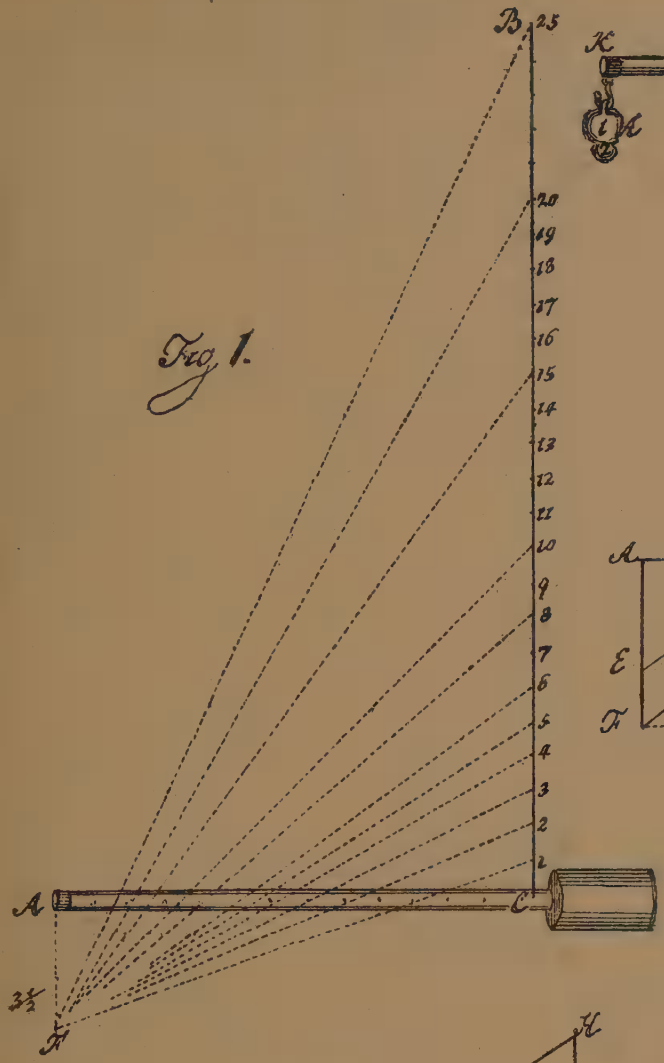


Fig. 1.

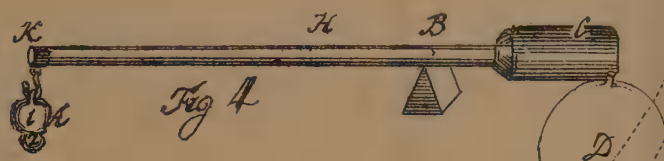
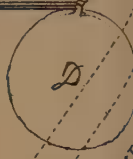


Fig 4



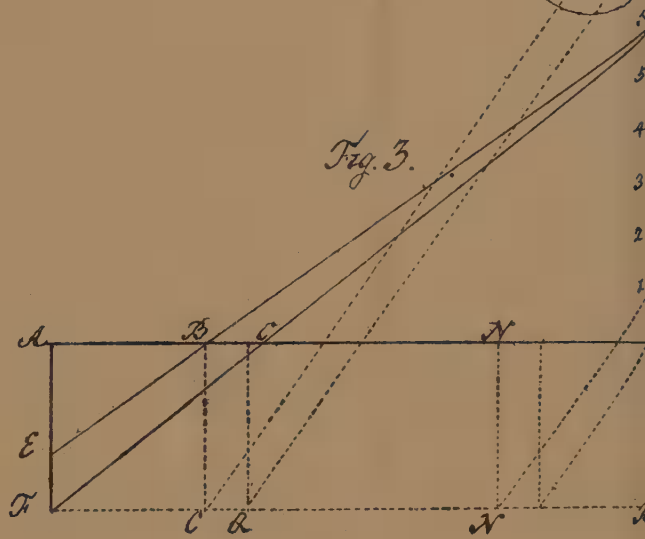


Fig. 3.

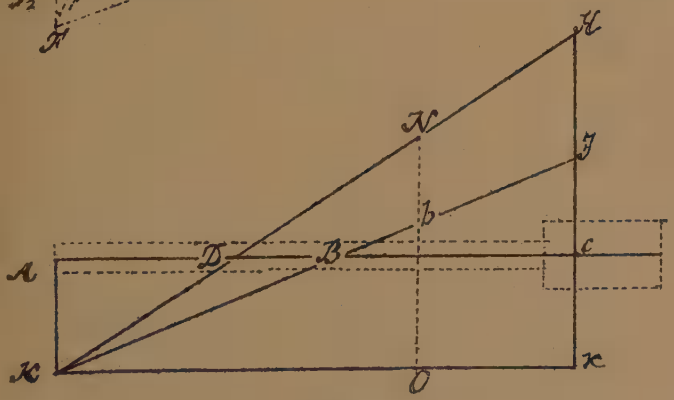


Fig 2

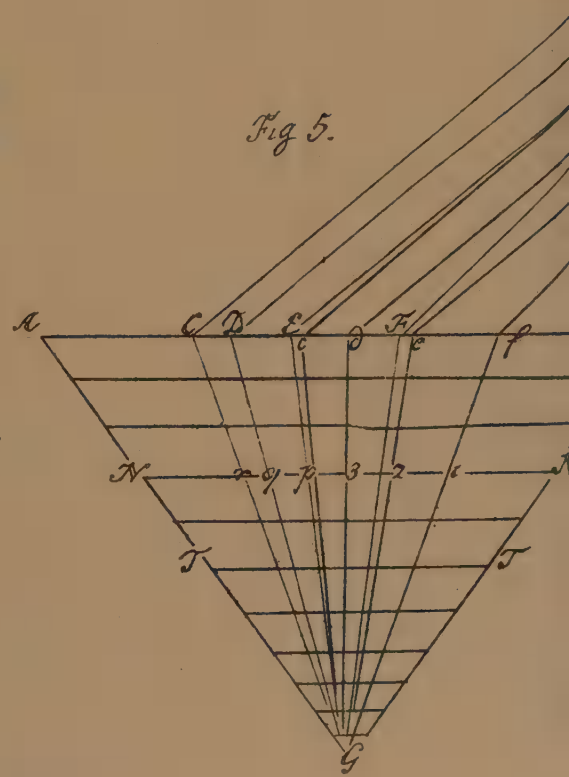


Fig 5.

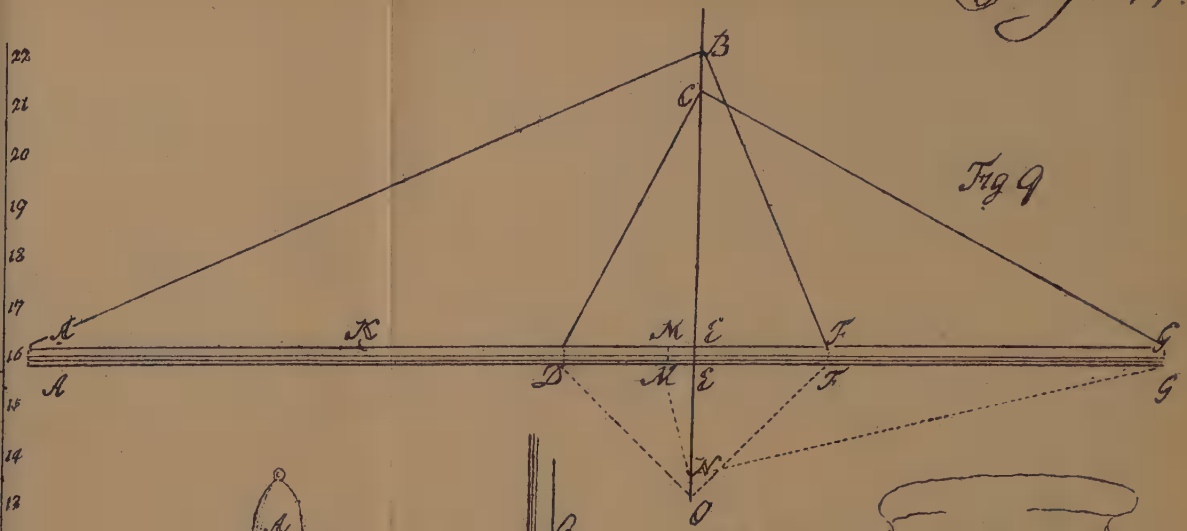


Fig 9

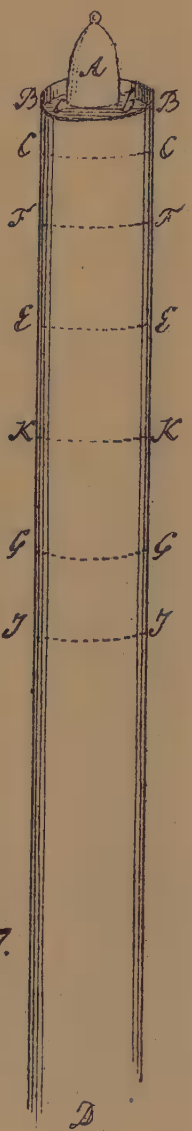
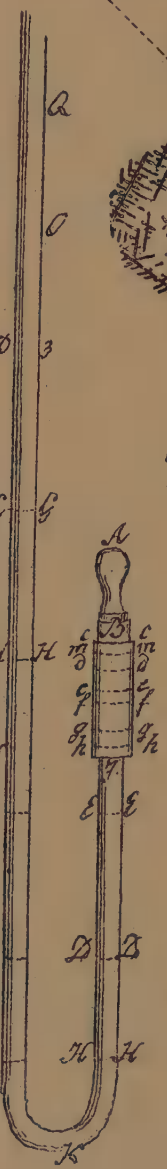
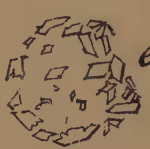


Fig 7.

Fig 8.





III. DÆDALUS HYPERBOREUS.

Eller

Mathematiſke och *Phyſicaliſke*

Förſök/

För Julii Månad 1716.

Aſſeſſor Polhaimers Betzmans-Utdelning.

För wigter äro åtſkilliga ſett påfundne/ them på mått-ſtockar och pyndare til ſina marcker och pund at indela. The ſmårſta gran och ſcruplar in til Lodtahlen utwäges gemenligen med GULL-WIGTER: the öfre från Lod- til Marck-tahl genom WÅGSKÅLAR/ ſom ellieſt kallas Wägbalckar: the ännu högre från Marcker til Punder förmedelſt BETZMAN; och the från Pund til Skeppunder utwäges genom PYNDARE eller dylikt. Och ſom thetta egenteligen hörer Geometrien och Mechaniquen til/ i ty the förnemligaſt under betrachtan hafwa thet ſom Wigters och Tyngders proportioner angår; ty lärer ock wara angenämt/ at en method angifwes til Betzmans och Pyndares accuratare och behendigare utdelning/ än then ſom wanlig och wedertagen är.

§. 1.

The maneer/ ſom wedertagna äro at utdela Betzmannen/ ſke genom inwägning: i ty/ når Handwärkaren haft Betzmannet med ſitt tilbehör färdigt/ har han ock haft 1. 2. 3. 5. 7. Punder wid handen; them ock heftat wid kroken/ ther af han funnit æquilibrii eller jemnwigtz punckten för 1. 2. 3. 4. 5. marckren/ them han ſedermehra har utmerckt. Men ſom therwid ofta ojemnt kan tilgå/ är thet bettre/ at Mechaniquen här-

vtinnan begiär Geometrien til hielp / och intet söker sitt af sig sielft; tå man ock skal befinna at delningarna så wäl behemdigare som accuratare ske kunna.

§. 2. *Fig. I*

Man låte sig förferdiga ett betzman med alt sitt tilbehör / med klump/ stock/ haka/ vtan widare anseende til starleken/ lengden och tyngden af entheras. Wäge thet sedan på en accurat wågbalck; samt söke thes centrum gravitatis settiande thet på ett kantigt eller vddigt jern; och se sedan efter/ hwareft thes jemnwigtz punct infaller / hwucka äro twenne requisita til fö jande vtdelning.

§. 3. *Fig. I.*

1. Jemnwigtz punckten ware wid C: hakans hängöglas punckt wid A. Längden them emellan A C: från C dragaes en perpendicle CB. från A til F också en perpendicle, som bör wara accurat i paralleliſmo med C B. A F delas i så många lika delar / som hela betzmannet har wägit. Som til exempel: om thet har wägit 4 och en half marck; deles thet i $4\frac{1}{2}$ delar lika stora. Samma delning eller cirkel-öpning tages och settes från C til B, så monga som linien tillåter / 30/ 40/ eller 60 stycken. Sedan från F, som är then sidsta marckdelningen / dragaes linier til alla lika delningar vthi CB. nemligen til 1. 2. 3. 4. 5. 6. 7. 8. hwareft the afskära stocken C A, som vti K, vti D, D, the ther äro the behöriga och swarande marcker: som 1. 2. 3. 4. 5. 6. 7. 8. På sidstone når delningarna indragas och blifwa trengre på stocken/ tages 5 eller 10/ eller 20 sådana delningar i stellet för en: tå man lett se kan hwareft the vtwisa halfpunder och pynder. Nemligen wid 20:de delningen på C D wises förſta pundet/ wid 40:de thet andra/ the ther afskära stocken A C, ther insettes naglar för the behöriga afdelningar.

Fast til lengden på stocken och til theß tyngdingen wiß regle eller proportion fordras/ bör doch achtas och paſſas så/ at jemnwigtz punkten faller in på thenna sidan om klumpen; samt at ther ifrån stocken blifwer jemntiock / til krokens hängöglas

öglas peripherie. Ellieſt torde något fehlachtigt inkomma uti afdelningen.

2. Doch/ om man wore owiſſer om lengden på ſtocken emellan krokens hengöglos centrum och jemnwigtz punkten: i thy / at jemnwigtz punkten infaller på ſielfwa klumpen; och krokens hengögla wore owiß: kunde man doch lett nog ſig utreda genom en af the följande reglor.

När Betzmannet med alt ſitt tilbehör är wägit / tå tager man twenne ſlags tyngder/ nemligen 1 marckz och en 10 marckz tyngd/ mehr eller mindre/ efter behag: (*Fig.* 2.) och them på mechaniſkt ſätt inwäger på ſtocken/ hwilka man ſupponerar infalla wid B och D, (*Fig.* 2.) hwaraf man kan ſe diſtantien DB, och i följe ther af weta:

1. Hela ſtockens lengd från krokens hengpunkt A til jemnwigtz punkten C, nemligen/ ſom ſkilnaden emellan the inwägda tyngderna multiplicerad med betzmannetz tyngd/ har ſig til ſumman af then ſtörre tyngden och betzmannetz/ multiplicerad med ſumman af then mindre tyngden och betzmannetz :: / ſå ock DB: til AC.

Eller: AK = ck giöres lik med betzmannetz egen tyngd. D och B the inwägda marcker. DB theras diſtance. Hc then ſtörre: Ic then mindre wigten ſom är inwägen; tå är thes proportion at finna ſtockens lengd: neml. HI × AK: Hk × Ik :: DB: til Ac = lengden på ſtocken/ ſom efterſöktes.

Eller: Betzmannet wäge 4 marck. Tredie marcken inwäges wid B. 7:de marken wid D. Diſtantien DB = 208. Tå ſäger man HI × AK = 4 × 4 = 16: Hk × Ik = 11 × 7 = 77:: ſå DB = 208: til AC = 1001 För hela betzmannetz lengd från ſitt centro æquilibrii til krokens hengpunkt.

2. Wil man weta AD, följer then af en ſådan proportion: Som differentien emellan the inwägda tyngderna; har ſig til then mindre tyngden och betzmannetz tyngd tilhopa; ſå DB til AD.

Eller: HI: Ik:: DB: AD. eller/ om man ſetter DB från b til N ſå at Nb är lika ſtort med DB, och parallelt med

HI; och far så linien fort til O: så är bO lika med AD som söktes.

Eller: HI = 4: IK = 7:: DB = 208: AD = 364. thet är AK = 4: til AK + Hc = 11:: AD = 364: Ac = 1001 som förr; hwaraf bewises theß wißhet.

3. Wil man söka Bc: brukas thenna proportionen: som differentien emellan wigterna som inwägde äro multiplicerad med betzmannetz wigt/ til then mindre wigten multiplicerad med summan af then större wigten och betzmanetz tyngd :: så distancen DB: til Bc.

Eller: HI × AK = 4 × 4 = 16: Ic × Hk = 33:: DB = 208: Bc = 429. När man sedermera wil söka Ac giör man som bekant är: Ic = 3: til Ic † AK = 7:: så Bc = 429: til Ac = 1001: som förr.

4. *Fig. II.* Thereſt jemnwigtz punkten faller in på klumpen/ och therigenom distantien therifrån intet rett kan aftagas; doch at man wiste krokens hängöglos punkt wid A: tå är allenaſt af nöden at en tyngd inwägdes/ hwaraf sedan alla the andra kunde afdelas. Som til exempel: om en marck infaller wid H wet man straxt distantien AB; i ty man inför/ som betzmannetz tyngd = AK: har sig til then inwägda tyngden = Ic:: så har sig AB: til BC. Tå sedan alla the andra marker från tomingen kunna innaglas genom sett/ som i thet förſta omtalt är.

§. 3. *Fig. III.*

Wil man på ett betzman insettia allahanda slags wigterr så Hollenſk som Engelſk; som ock the åtskilliga/ som i ett land brukelige äro: tå kunde ynderſt på betzmans stocken settas thet brukeligaſte; på sidorne the fremandes: hwilket begwämligaſt ske kunde / om betzmans stocken wore 6- eller 8-kantig. Kunde också för större begwemlighet och nytto/ samt ock zirat giöres ett litet annat för Lod til Skålpunder/ hwilken rymmas kunde i then förras klump och stock. Thet letteſta maneret at insettia många slags wigter på ett betzman / ſker på enahanda ſet. Nemligen man wäger betzmannet mot then Swenſka wigten;

ren; och vtdelar thet/ på sett/ som sagt är. Sedan wäger man samma betzman mot Hollensk wigt; och vtdelar thet på samma sett/ som saat är. Sedan mot victualie-wigt/ och giör sammaledes. Nemligen/ om AF wore then Swenska wigten/ blifwa alla afskärningar vti CNL efter then Swenska wigten. Wäges betzmannet mot Hollensk wigt/ och thet blifwer i wigten mindre än then Swenska/ jemnt med AE: tå drager man från E til the samma punkter i perpendiclen LH: thereft AL afskäres/ som vti B. C. N. äro delningarna för samma Hollenska wigt: och således med the öfriga.

Eller/ om man hafwer ett betzman vtdelt vti Swensk wigt/ och man åstundar therpå en annan. Wäg therföre betzmannet mot the begge wigterna/ eller sök differentien på annat sett: hwilken man supponerar wara en half eller en hel mark/ från then andra; och som 1 mark betyder 1 afdelning i linierna AF och LH, så wet man theß lengd: sedan setter man AF nemligen tyngden på betzmannet i Swensk wigt på LM och slepper så ned paralleler til BC, til NN. Drager så sedan från the förra tilhöriga delningar linier, neml. CH: IQ &c. tager sedan differentien, som sagt är/ och setter från L til K. från I til H. och drager så KN: och HC paralleler med IQ och LP: så är NP = NP lika med differentien i delningarna; så ock CQ. och distantien blifwer PL och CL. Och sammaledes med alla the andra marker.

§. 4. *Fig. IV.*

At bewisa alt thet föregående wore för widlyftigt. Wil allenast framstella thet/ som til grund är lagt til vtrekningarna; nemligen/ at wisa thet betzmannets tyngd til the marker och pund som widhakas/ äro i proportion, som delningarna från thes centro gravitatis.

Man tager en mätstock så ojemn man wil/ på ena endan/ eller ock lika giord med ett betzman/ och setter then på sitt hypomochlio B. Tå considereras han på begge sidorna/ som han wore vtan tyngd: i ty thet minsta gran kunde wittan ned. I sådant måhl hafwa sig lengdren som tyngdren

reciproce: thet är / om man hengde tyngden D wid C, och tyngden A wid K, hwilkas proportion wore som lengden KB til BC, tå låge samma mätstock qwar på sitt hypomochlio. Men skufwades samma stock från sin balance på H; wore klart at sidan C wägde ned/ och sidan K wägde op/ så at hela stocken från A til C wore i wägning på ena sidan op/ på andra ned åt; thet är/ at hela tyngden af stocken stemde tilhopa at föra then ena eller tyngre sidan ned. Men som samma wägning icke sker med lika hastighet och force tå/ när stocken skufwas något litet stycke från sitt hypomochlio, som när then skufwas mycket; ty moste distantien från hypomochlio på enchera sidan proportionera wägningen/ och thet reciproce til lengdren/ nemligen som KH: til HB: så hela betzmannetz tyngd/ som öfwer alt wittar utur balancen, til tyngden A, som skulle föra then samma uti balancen eller jemnwigten igen. Bifogades therföre then sökte tyngden wid K, wore just thet andra centrum æquilibrii wid H; och så wid the öfriga. Hwilken demonstration man har welat andraga/ som andre therom myket litet förmåla / och som man theraf hafwer tagit the förra små reglorna.

§. 5.

Efterföljande tafla tiener at utrekna/ hwad slag af betzman man helst wil: nemligen/ om betzmanet woge 1 mark / brukade man 1 columnen: om 2 mark/ andra columnen. Sielfwa stocken från sin jemnwigtz punkt/ delas i 1000 delar til krokens hengöglos punkt; tå har man i taflan the delar man åstundar för hwar mark/ ther man kan insettia naglarna utan widare mätning. Nemligen om betzmanet wore 4 marker tungt/ brukade man then 4:de columnen. Och om tå betzmannet wore delt i 1000 delar/ toges 200 för then 1 marken/ 428; för then 3:die/ 600 för then 6:te. Bör ock therföre betzmannetz tyngd så wara passad/ at thet jemnt wäger i någon markdelning/ som förmedelst blys instöpande/ eller annor konst ske kan.

Tafla

TAFLA
För Betzmans Afdelning.

M.	1 Mark	2 Mark	3 Mark	4 Mark	5 Mark	6 Mark	8 Mark	M.
1	500	333 1/3	250	200	166 2/3	142 6/7	111 1/9	1
2	666 2/3	500	400	333 1/3	285 5/7	250	200	2
3	750	600	500	428 4/7	375	333 1/3	272 8/11	3
4	800	666 2/3	571 3/7	500	444 4/9	400	333 1/3	4
5	833 1/3	714 2/7	625	555 5/9	500	454 6/11	384 8/13	5
6	857 1/7	750	666 2/3	600	545 5/11	500	428 4/7	6
7	875	777 7/9	700	636 4/11	583 1/3	538 6/13	466 2/3	7
8	888 8/9	800	727 7/11	666 2/3	615 5/13	571 3/7	500	8
9	900	818 2/11	750	692 4/13	642 6/7	600	529 7/17	9
10	909 1/11	833 1/3	769 3/13	714 2/7	666 2/3	625	555 5/9	10
11	916 2/3	846 2/13	785 5/7	733 1/3	687 1/2	647 7/17	578 18/19	11
12	923 1/13	857 1/7	800	750	705 15/17	666 2/3	600	12
15	937 1/2	882 6/17	833 1/3	789 5/19	750	714 2/7	652 8/23	15
20	952 8/21	909 1/11	869 13/23	833 1/3	800	769 2/13	714 2/7	20
25	961 7/13	925 25/27	892 6/7	862 2/29	833 1/30	806 12/31	757 19/33	25
30	967 23/31	937 1/2	909 1/11	882 6/17	857 1/7	833 1/3	786 16/19	30
40	975 25/41	952 8/21	930 10/43	909 1/11	888 8/9	869 13/23	833 1/3	40
60	983 37/61	967 22/31	952 8/21	937 1/2	923 1/3	909 1/11	882 6/17	60

§. 6. *Fig. V.*

Thet letteſta ſett at afdela naglarna på betzman / är igenom then föreſtelte tafla med tilhielp af en triangel: then jag til ſlut wil lemna åt them ſom med ſådant hafwa at ſyßla / thylikt i wercket at ſtella: neml. *Fig. V.*

Man draaer förſt en linia af en owiß lengd / och delar then af 100 eller / om man kan / 1000 delar. På then giör man en triangle A B G ſå ſtor och wid / ſom man behagar:

och

och drager parallel linier NN. TT.: med then öfra så monga som med åtskilnad dragas kan. Sedan tager man berörde tafla och en column, then man behagar; och afdelar linien AB efter the afdelningar/ som ther äro vtsatte. Räter så en perpendicle op från B, och delar then i så många lika delar/ som giörligit är. Män tager til exempel andra columnen i taflan: hwarifrån settes 333; från B til f för första marken. 500 ifrån B til e för andra marken. 600 til d för then tredie/ och så widare. Sedan går man förbi 2 delar vti perpendiclen BZ nemligen h, g. dragande sedan i ordning från f til f; från e til e; från d til d, från c til c, och så i ordning efter delningarna. Thereſt man hade tagit första columnen i taflan/ går man allenaſt en delning nemligen h förbi/ begynnande på g at draga hypothenuſor til 1, 2, 3, &c. markdelningen. Hade man tagit 6:te columnen, går man 6 delningar förbi/ begynnande på D; och therifrån drager linier i ordning til f, e, d, c. Hwilket lemnas i ens godtyckio: doch så at vr then samma columnen som brukas settes altid delningarna från B til A. Från samma delningar som från f, e, d, c. dragas linier til G. Sedan triangeln således är förferdigad/ til then storlek man lyster/ ju större ju bettre; kan man hafwa then sedermera wid handen med theß tilhielp allahanda slags betzman efter åstundan at vträkna/ vtan widare tilhielp af liniers dragande och och afmätande.

När man sedan wid handen hafwer ett betzman/ thet man wil vtrekna/ söker man först thes tyngd förmedelſt wägning: thet wäge 2, 3, 4, 5, 6, 8 marker jemnt eller oiemnt. Sedan setter man thet på en kant/ eller ett vddigt jern/ och merker theß jemnwigtz punkt/ hwilka twenne böra först hafwas. Sedan söker man theß lengd/ från jemnwigtz punkten på en af paralelerna och tilser hwareſt then finnes/ som är lika lång med berörte betzman från sitt jemnwigtz punkt til kroken: ware therföre NN. Betzmannetz wigt tages på perpendicle linien, DB, som til exempel 4 marker/ tå går man förbi 4 strek eller delningar/ nemligen h, g, f, e: tager then 5:te F, drager så

FF parallel med ff, för the första marken. EE parallel med e e. DD parallel med d d. CC parallel med c c: drages sedan blinda linier från CDEF til puncten G: the ther afskåra linien N N vti o p q r. tå har man vti N N alla delningar/ som til thet betzmanet fodras: neml. o N blir then första markdelningen/ p N then andra/ q N. then tredie/ them man sedan kan insettia på betzmanet.

Ännu behendigare genom taflans tilhielp. När man wet hela betzmannetz tyngd i marker/ går man til taflan och then mark-columnen som tilhörer. Ware linien B A delt/ som förr sagt är/ vti 100 eller 1000 delar/ ifrån then columnen settes på linien A B the ther warande markdelningar. Til exempel 5 markers columne afsetter man för 1 marken 166$\frac{2}{3}$ delningen; För then 2:dra afskär man then 285$\frac{5}{7}$ delningen; För then 3:die then 375:te neml. B f. B e. B d. Therifrån sed indrages linier til G. neml. f G. d G. e G. söker sedan ibland parallelerna hwilkenthera är lika long med betzmannetz distance från sitt centro æquilibrii; om thet wore N N har man strax the behöriga delningar N 1. N 2. N 3. N 4. för the 1. 2. 3. 4. marker at insettias från sitt jemnwichtz punckt på betzmannet.

Thereft jemwichtz punckten infaller på klumpen/ och distantien är owiß från hengdatat/ som förr sagt är; och man åstunbar samma tindrighet och lerthet at weta naalarnas afdelning: är ther til först nödigt at hafwa tyngdren bekant; tå man går til Taflan och tager vtur then columnen, som wisar samma betzmannetz tyngd/ och efter then vtdelar linien AB, och sedan från the markdelningar drager blindlinier til G. Sedan inwäger man twenne bekanta tyngder/ som 4 och 12 mark/ och tager distantien them emellan/ och ser efter om then är lika stor med distantien på AB emellan 4 och 12. Thereft icke thet så är/ sökes then på någon annor parallel, som til exempl. på N N: om distantien emellan 4 och 12 marker befinnes ther warg af samma lengd med then på betzmannet/ är NN then eftersökte linien, som innehafwer alle delningar/ för thet bemelte betzman-

net; och lengden NN är then samma med betzmannetz: tå man kan taga theraf så många delningar som behöfs/ och sætta i samma distance från 4 til 12 markren/ som the befinnes wara på linien NN.

§. 7.

Lärer ock förmerkias/ at om man wil bruka sig til nytto bemelte Arithmetiska tasla/ bör betzmanet wara i jemnwicht med några wissa marker/ och intet hafwa någon bruten: hwilket lett kan ske genom jemnkning och afskärning/ eller genom instöpning af bly/ eller thylikt. Hafwer ock welat therföre bifoga några mechaniske reglor och grep/ them til nytto/ som handtwerck theraf giöra; för andra bettre thervti öfwade/ lära nogsamt tiena the förra anwisningar af Geometrien. Om Wägbalckars och Pyndares förbättring wil man wid annat tilfelle ock omröra.

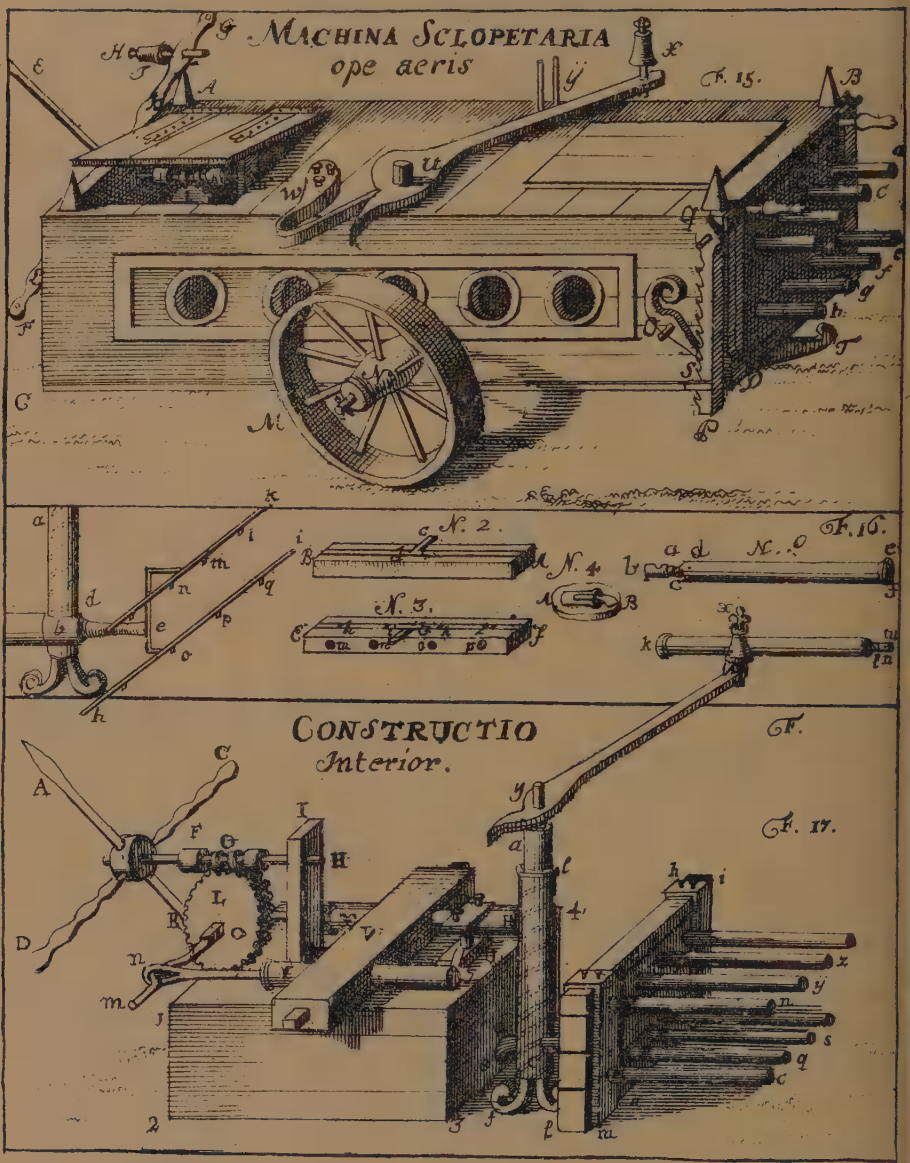
Om en Wäderpump.

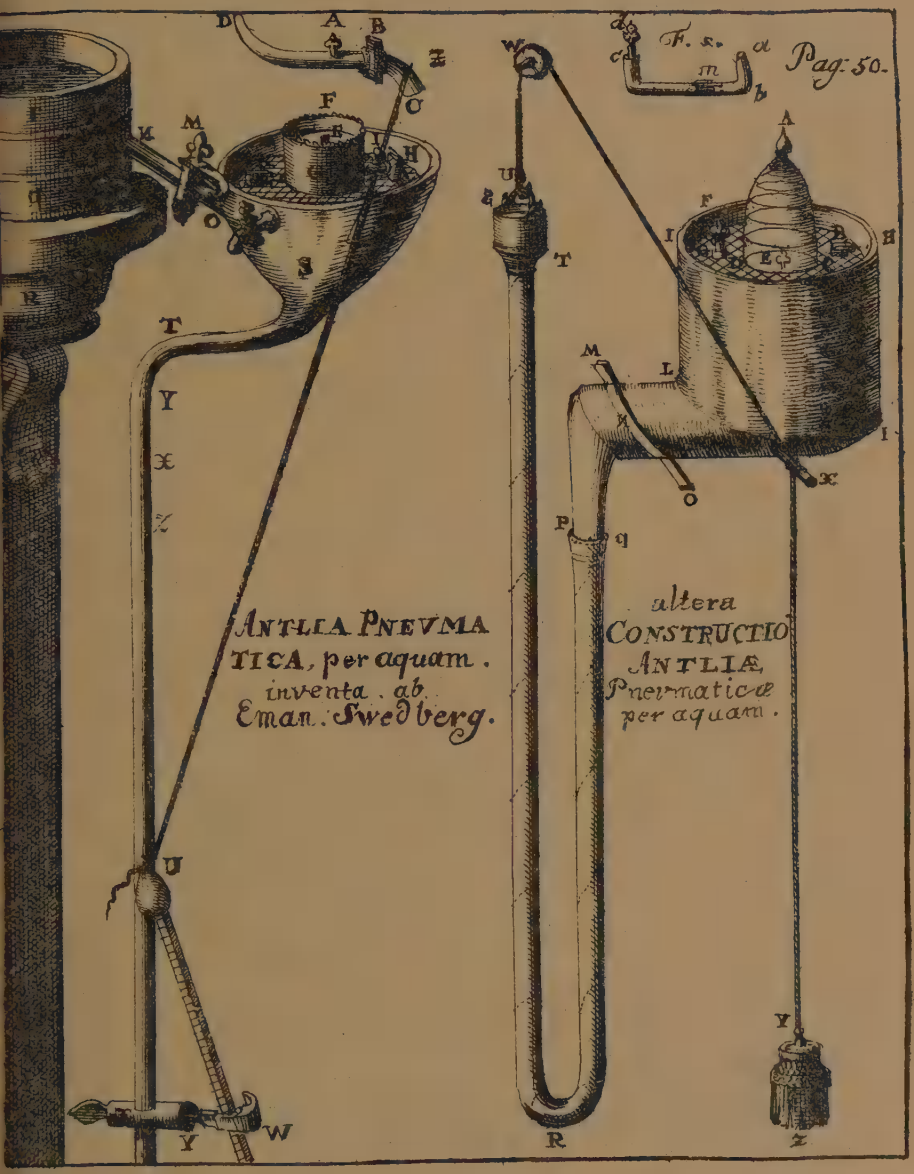
Eller

Antlea Pneumatica.

§. 1.

UTi Boile och Gueriqve äro först Wäderpumpningar opfundne/ samt the tilbehör som thertil fodras; hwilka doch i begynnelsen warit enfaldiga och owiga; men sedermera/ genom andras tilhielp och försök/ temmeligen lettade. Så at nu i Holland och England werckstelles sådana/ som öfwerträffa i letthet/ noghet eller accurateste monga reser the förras. I England äro the brachte til en fullkomlighet af en benemnd Hawksbee; therigenom ock mongahanda prof och försök giorda äro/ som förr så ogiorda som osporda woro. Men som thylika machiner fodra en nett mechaniq;, proportionerar sig theremot theß omkostnad/ så at the för thenorsaken skul intet kunna wid alla Academier allmenna blifwa. Hwarföre man hafwer warit betenckt på ett lindrigare sett/ the samma prof/ experimenter och försök at werckställa utan sådant kostbart


MACHINA SCLOPETARIA
ope aeris
F. 15.
F. 16.
N. 2.
N. 3.
N. 4
N. 5
CONSTRUCTIO
Interior.
F.
F. 17.


D
A
B
Z
C
F
M
M
H
O
S
T
Y
X
Z
U
Y
W
ANTLIA PNEVMA
TICA, per aquam.
inventa ab
Eman. Swedberg.
F. 2.
Pag: 50.
W
U
T
M
L
K
O
P
q
R
altera
CONSTRUCTIO
ANTLIÆ
Pneumaticæ
per aquam.
Y
Z

bart tilbehör; och thet förmedelſt watns eller qwickſilfwers in- och vt flytande i en Canal, giord af hwad emne och form man behagar.

§. 2.

Lärer wara bekant/ at Galilæus Galilæi enItaliener förſt funnit at watnet vti ett tomt rum intet högre kan twingas/ än til 30 a 31 fot; tå thet nödwendigt moſte ſtanna/ faſt therófwer wore monga 100 alnars vacuum. Hwilcket at förſtå/ kunde man giöra förſök med pumpſtockar och andra rör och canaler/ ſom högre äro än 30 fot. Til exempel 1. Man vttömer ett longt eller 40 fotz rör eller thoglig ſtock af alt wäder/ förmedelſt pumpning eller eld/ then öfre enden ware tillyckt/ then nedre öpen. Setter man ſedan then öpna endan i watn/ ſå ſkal watnet löpa op i thet vttömte rummet til 30 eller 31 fot/ hwareſt thet ſtall ſtanna/ kunnande ei widare twinga ſig op. 2. Eller hade man en pumpſtock wid handen/ ſådana ſom wid grufwor och brunnar brukas: och ſetter ſå ena endan i watnet/ och drager pumpróret opföre åt/ tå watnet följer med/ intils thet kommer til 30 eller 31 foten från nederſta watubrynen/ ther thet ſtannar, intet följande widare ſin ledſtong/ faſt then kunde dragas mong 100 fot högre op. 3. Eller/ om man tillycker ſamma ſtock på then ena endan grant/ at intet wederhohl finnes/ och ſedan fyller then proppad full med watn; wender ſå then om/ ſå at then öpne enden wendes ned åt/ vti ett watn/ eller i bara lufften; runne watnet ned/ tils thet kom til then 30 eller 31 fotz högden lemnande alt thet öfriga rummet tomt. Med qwickſilfwer hafwer thet ſig ſammaledes: doch med then åtſkillnad/ at ther intet högre ſtiger än til $\frac{1}{14}$ dels högd/ ſom rent ſiöwatn. Therföre/ om man hade ett rör af 7 eller 8 qvarters lengd/ och tömtes wädret therur: ſätter ſedan i en bulck med qwickſilfwer/ löpte thet op af ſig ſielf til 5 qvarters högd. 2. Eller/ om ſamma rör fyltes med qwickſilfwer från toppen ned til/ och ſedan wendes/ ſå at then tilſlutne enden komme op åt/ och then öpne ned åt; runne qwickſilfret ned/ tils thet ſtannade på 5 qvarters linien:

hwilket af Barometrer i dageligit bruk ses kan. 4. Eller om man hade ett litet pumprör/ och en pump / och droge så thet inre röret sachta opåt/ följde qwickſilfret med til then bemelte högden/ tå thet nekade widare at följa. Orſaken ther til kommer af then wädertryckning/ ſom vtanför är: hwilken balancerar, eller är i jemnwigt med 30 fots watn/ eller 5 qwarters qwickſilfwer i högden. Ty lika tyngd förſpörjes wara i 5 qwarters högt qwickſilfwer/ ſom i 31 eller 32 fots rent watn: Thet förra warande 14 gånger tyngre; tå thet ock fodrar 14 gångers mindre högd.

§. 3.

The förbemelte prof bewiſa grunden til wår Wäderpumpning: förmodande then ſå i wercket warda befunnen/ ſom then med theorien enlig är. Helſt ſom then hafwer ſå ſäker grund och prof at ſtödia ſig wid. Then förſtas beſkrifning är then ſom följer.

1. HTUX är en Canal eller ett rör giordt af metall, koppar- eller bleckjerns plåtar/ från öfwerſta toppen til endan 33 eller 34 fot lång wid paß: Från T til y, hafwande 31 fots lengd/ lika med then ſom watnet kan giöra i opſtigningen i vacuo. 2. Conus TSH ſom ofwanför är/ hafwer en botn HK. 6 eller 10 finger nedrigare än öfwerſta randen på Conus: ſå at en rand eller en circularie linial är lemnad omkring öfwer botnen. 3. Ofwan på ſamma botn ſettes G en cylinder, faſt eller lös efter behag/ ſom ock har en botn litet nedrigare än thet öfwerſta. 4. Från underſta botnen H genom cylindern E går ett rör/ ſåledes giordt ſom thet ſom ofwan för ſig ſielft ſatt är/ nemi. CB AD. Wid B och H på thet röret är en valvula eller en luftdör/ hwareſt wädret har lof at gå vtåt från C til D men intet inåt. Wid A är en liten nyckel ſom inſkrufwas i röret. 5. Thetta röret affides ſatt är ſåledes giordt / at then nedriga och widare enden kommer in vti ſielfwa Cono S. Luftdören H och windnykeln I ſtraxt vtanföre. Then mindre och öfre öpningen wid E, hwaröfwer recipienten eller wäderglaſet

derglaſet kommer at ſettias. 6. K Är ockſå en luftdör / ſom lyftes op och ſlutes til liggande wid botnen. 7. O är en tapp med en dammykel på ſatt öfwanför botnen / hwarigenom watnet kan afrinna / ſom kommer på botnen. 8. P q är ett kar fylt med watn / litet högre ſatt än ſielfwa antleam. N O är ett koppar rör / ſom går från karet in vti ſielfwa antleam mynder botnen. M är en damnykel / hwilken kan vplåta roret at watnet flyter från karet in vti antleam, ſamt tilſluter thet. 9. X Y W är ockſå ett rör med en damnykel i endan / giord ſåledes / at när U W lyftes opföre / förmedelſt ſnöret U Z, at watnet rinner vt nedanföre; eller om U ſenckes ned åt / at watnet ſtår qwart. Thenna damnyklen X Y kan ſättias lengſt ned / eller ock annorſtädes ſom lägligit finnes. 10. Ståledes giordt / kan man ſettia nedre enden i watn eller i ett kar fullt med watn; ſom ock ſedermera hela Antleam, i hwad kammare man behagar ſom är i 2 eller 3:die waningen; karet P q ſamt Conum S H innanföre: wridningen T S i fönſtret; then öfriga Canalen eller röret vt anför muren til 30 eller 31 alnars högd; hwar wid then kan feſtas med lenkar och hakar.

Eller ernar man håfwa en Antleam Pnevmaticam af mindre högd / doch giörande accuratare prof / kunde man i ſtelle för watn / bruka qwickſilfwer / och förminſka hela ſtorleken / ſå lengden ſom tiockleken af then ſom beſtrifwin är til $\frac{1}{14}$ gånger mindre. Då har man ei af nöden wridningen wid T S, lades allenaſt en fyrkantig plåt eller ett brädeſtycke öfwer T, hwilket röret E ginge igenom therwppå at ſettia recipienten. Theß ende bör ock ſettias i en bulck eller kerl fullt med qwickſilfwer: hafwande ſedan ſamma proportion ſom thet förra.

§. 4.

När man wil genom thenna machinen pumpa wådret vt / ſätter man glaſet eller recipienten på Cylindren öfwer rörholet E, och fyller ſå karet P q med watn til brädd; dammycklarna wid M. O. och Y. warande tillykte; öpner ſå nyklen wid M. at watnet kommer häftigt ſtormande ther igenom vti ſielfwa Antleam. Då wådret ſom innom är moſie ſöka ſig vtlepp hwareſt thet kan. Och ſom hohlet wid Y är tillykt /

ſamt

samt wind dören wid H. slepper ingen ting inåt / mosse thet lópa vt genom luftdören K, som sielft ópnar sig och gifwer wádret rum. Sleppes således watnet in / til thes thet fyller antleam proppad full samt ock något ófwerflódar ófwer botnen. Sedan láses canalen O N med nyklen M igen / och drages V w op åt / eller ópnas then nedre damen; hwarmedelst watnet rinner af i thet vnderstående karet / winddören K tillyckiande sig sielft. Tå wádret kommer ock strómmande vtur recipienten wid E genom Canalen E J H, och siuncker så watnet ned i thet vnderstående / tils thet kommer at stanna wid then högd / som proportionerad ár mot then vtanstående och inre wáder-columnen. Thet samma giöres andra gången / ópnande nyklen wid M, och slutande til then wid Y: tils watnet kommer op til botnen K H och flódar ófwer / tå thet sedan sleppes op wid Y och láter watnet strómma vt. Hwarigenom man giórligen finnande warder att wádret drages mer och mer vr recipienten, genom Canalen E I H tils thet ár nog för the experimenter som árnas i wercket at stellas.

1. Bór noga merkas / at recipienten, som kommer stående ófwer lufthohlet E, stelles på en dáfwen Swinblása / ther wid recipienten bást kan hefta och bewara sig sielft för wádrets inlopp wid breddarna. 2: Når wádret ár vtpumpat / och man åstundar at insláppa thet samma igen / ópnar man allenast lilla skrufnyklen wid I, tå wádret löper så wál in vti recipienten, som igenom winddören H in vti sielfwa Antleam, och tómmer watnet ther ut / fyllande then med wáder igen. 3. Til stórre wißhet och säkerhet at inga små hohl wid rórens och nyklarnas fogningar skola wara / láter man watner ströma med wádret vt igenom locket K, och fylla hela thet ópna rumet H I K, så at watnet ófwertácker så wál winddören K, som then wid H, och lilla nykeln wid I. Tå ther the elliest intet wore wederráta / blefwe the tillykte förmedelst watnets ófwerflytande. Om Cylindren G sitter fast wid botnen / eller ei / giór thet intet til saken; allenast E ár wedertett satt wid cylindren, thet ár / wel tillódt eller tilhartzat. Toppen O ár lika / om then ár wádertát eller intet / i ty then ár satter ófwer botnen

botnen at öpnas / når man wil hafwa at watnet skal rinna af från botnen. Hwaraf ses kan / at inga små lufthohl lärer kunna gifwas / som icke hafwa watn om sig och dem sig sielft. Wil man hafwa så mycket qwicksilfwer ospard at fylla öfra rummet H I K med / skulle alla fogningar än tätare tilslutas. 4. Achtes och noga / at nedre endan af thenna Antlea kommer at settias i watnet. 5. Och når 3 eller högst 4 pumpningar äro skedde / mosie watnet sedermera hafwa satt sig wid 30 eller 31 fotz högden; hafwande thet spatium som öfwer är aldeles tomt af wäder.

§ 5.

Ellieſt är här wid bifogad en annor Antlea af samma art och beskaffenhet / hafwande ock samma grund til sin theorie och praxin, som then förra: doch med åtskilnad / at then är simplare, så at settas i wercket / som sedermehra atförrätta pumpningen uti; bestående endels af metall eller koppar endels af läder. 1. I H L P är ett koppar käril aldeles wädertett af 1 eller ½ alns diameter: theß botn D C är nedrigare satt i sielfwa cylindren til ¼ quarter. 2. Från G til E går en krokig canal, som hafwer sin begynnelse wid G: hwarwid m nykel med skruf i endan är insatt. Mitt uppå thet samma / hwilket kommer at sitta in uti anlean, är en luftdör: aldeles lik med (d c m b a) som ofwanför står: c d är nykelen inskrufwad i canalen, giord til at släppa wäder in uti recipienten, når som påfodras. N är luftdören til at sleppa wädret ur recipienten in uti antleam, samt at hindra thet watnet icke löper in uti glaset. (a) är thet lilla hohlet in uti recipienten. 3. E A är sielfwa wäderglaset / som är satt på en däfwen swinblåsa. 4. P R T, är ett läder / likt med thet som wid watnpumpar äro brukeliga. S T, ett koppar eller meßings kärl; hwarwid en krok och ett snöre är bifogadt / nemligen U W X Y ther med hela thenna sidan på antlean kan hißas op och ned.

§. 6.

Når man wil stellat i wercket / hißas sidan S T R / op åt / och giutes watn thervti / tils thet flödar öfwer. Tå man hinkar

kar thet ned / så lägt som ske kan: och sedan drages op igen och giutes watn therwti / tils thet flödar öfwer; hinckas så åter ned til en 30 eller 35 fot. Wid ingiutandet af watn är klart / at wädret söker vndanflycht och twingar sig vt igenom lufthohlet vnder dören B; och sedan wid nederhinckandet drages wädret vr recipienten genom hohlet a och dören m; så at watnet kommer at stanna wid then 20:de eller 25 fotz högden. Wid andra operation kommer watnet höger op at stadna. Och sedermera når alt wädret är pumpat vr glaset / stannar thet wid then 30 eller 31 fotz höaden: reknande thet således / at när ST kommer neder om IH til then 30 eller 31 foten; tå begynner watnet på at draga sig vndan ned åt / och sedan evacuerar cylindren och glaset IHL. Tå man sedan åstundar wäd r in vti recipienten och antlean igen / öppnas hohlet wid G; tå alt kommer i sitt naturliga stick.

§. 7.

Inwenningar. Här wid kunde wel monga inwenningar giöras; likasom en sådan antlea wore fast lättare at raisonera om / än stellan i wercket. Then förSta torde wara 1 / at wid sådana några fogningar samt luftdörar och nyklar finnas / at thet knapt lärer kunna förebyggias / med mindre små lufthohl komma och förhindra hela spelet. Hwartil swares / at thet wid then förSta machinen intet kan befruchtas / helst som windröret X Y, damnyklen M eller tappen O giorde liten skilnad / om the woro wädertäta eller ei: Ty har man för them aldeles ingen fahra. Luftdören K tepper sig wel til af sig sielft / helst som then inre enden är öfwerdragen med ett däfwit skin eller blåsa. Nykeln wid I är ock med en skruf förSedd; ty låter ock then wel proppa sig til. Thereft Cylindren G är wäl festad wid botnen / giör ei heller så stort til saken. Hwad fogningarne widkommer / ther thet mindre röret löper vr antlean in vti recipienten är lett at tilhartza / lacka eller tillödia / at wädret vteSlänges. Doch i fall något skulle telas wid IH och wid K, ersettes och hielpes thet med watnet / som kommer all öfwer / och tepper thet vtantöre til.

Then

Then andra Machinen är ännu simplare och säkrare at operera med; hafwande icke heller så monga öpningar och fogningar som kunde förorsaka swårighet at vtehålla wädret: i ty ther är allenast en luftdör wid B, som förſees kan på then ena sidan med däfwidt skin; samt nykeln G at then täpper wäl til.

2. Ännu kan ett inkast giöras. At en sådan accurateſſe eller noghet / som wid sådana wäderpumpningar fodras / intet kan erhållas / emädan watnet inne hafwer små lufft-particlar. Doch / til swars häruppå / finner man af åtskilligas samt af Galilæi experimenter, at thet öfre spatium bliſwer nog wädertomt / helſt som thet faller til then 30 eller 31 fotens högd / uti en noga proportion med qwickſilfret i tyngden. Ty kunde man wäl sluta at sådan wäderpumpning genom watn wore så accurat och noga / som någon annor. Doch om thet skulle förſwaras och erhållas / at watnet inne hafwer wäderparticlar och therigenom torde wädret i then accurateſſe och noghet som fodras / intet kunna vtpumpas / eller gifwa thet nöje vti experimenterna, som wid andra sådana giorda äro. Thetta at förebygga / kan man i stelle för watn bruka qwickſilfwer / och operera på samma sett som förr bemelt är; och thet giöra theß offtare / som thet har mindre spatium at draga wädret vt. Då man ock förmodar / at therwid then accurateſſe kan erhållas som wid Boiles och Gueriks antlior.

3. Kunde ock inwendas; at watnet skulle löpa vt klumkewis nedanföre / som ellieſt i boutteiller ſker / at wäder particlarna följa med. Hwar til swaras / at sådant kunde förmodas / om hohlet nedanföre wore widt / samt om thet lemnades at vtrinna i bara lufften. Men skulle then nedre enden komma at stå i watn; bleſwe watnet ståndande i Canalen, om then wore minder är 30 fot hög; eller flöte thet ned til bemelte rum. Så ock wid boutteiller, faſt the hade 1 eller 3 tums widd i mynningen / om the op och ned wende sättes i watn / skulle thet förbliſwa qwart i boutteillen. Eller ock om mynningen wore 1 eller 2 linier i diametr; skulle thet giöra sammaledes. Andra insagor / som har wid kunde giöras lärer Läsaren ſielf kunna finna ſig vti.

Utreknig och Afmätning för watnetz och wädretz rymd och högd i sådana Antlior.

§. 1.

GEnom then **toma rymden** / förstås här alt thet spatium, som är ofwan ör watnet; så recipientens som stelfwa Antliæ. Om watnet stannade wid högden E E (Fig. 7.) kallades E P A B F then toma rymden: warande then Figuren jemn eller wriden / Coniſk eller Cylindriſk. Genom then **högsta högden** förstås här then högden / som watnet kan hinna til i vacuo, neml. 30 eller 31 fot. Hwilket ändrar sig i åtſkillig slags wäderlekar; samt af watnet / som thet salte och thet kalla är tyngre än thet sötare och warma. Nu som wädret kommer at utdragas af recipienten; kan intet watnet strax ſtella ſig til högsta högden; efter wädret som i recipienten är kommer ofwanför watnet / och genom ſin Compreſſion tryckер watnet ned om then 30:de foten. Therföre at finna högdernas proportion i förſta / andra / tredie pumpningen / ſenda theſſa proportioner til eftersyn.

För then förſta Pumpningen. 1. Som then toma „rymden ofwanföre / Recipienten inberäknad: har ſig til „Recipientens rymd :: ſa har ſig 30 eller 31 / ſom högſta „watnſtigningen är invacuo: til förſta högdens comple„ment. Hwilket när thet afdragit blifwer från 30 eller 31 / har man högden / ſom watnet ſtiger til i förſta pumpningen. 2. eller (Fig. 7) hwareſt högden E D = 30 eller 31; Som rymden E B B E × A: til A:: ſå högden D E = 30: til högdens complement G E. Drager man I E af 30 / blifwer E D then högden / ſom watnet giör i förſta pumpningen. 3. Här af följer thenna „proportionen; at recipientens A rymd: har ſig til Ant„liæ toma ſpatium B B E E:: ſom högden E I: til I D. 4. Så „är thet ock med the andra Antlior, ſom äro Coniſka eller Cylindriſka

lindriſka oſwanföre: tagande til exemple then Coniſka/ hwareſt jag ſupponerar 30:de fotens högd wore wid T; och watnet efter then förſta pumpningen ſtadnade wid Z; tå hög " den YZ: hade ſig til ZT:: ſom ſpatium TSH: til ſpatium " Recipientis. 5. Toge man qwickſilfwer i ſtelle för watn/ förblifwer likwäl ſamma proportion; doch i ſtelle för 30 eller 31 fot tages 5 qwarter/ och hafwer ſig ſammaledes thet öfra toma " ſpatium tillika med recipientens: til Recipienten:: ſom 5 " qwarter: til högdens complement. Hwilket afdragit af 5 " qwarter gier mig högden/ ſom watnet har ſtiget til.

Genom thenna Proportionen kan man ſee/ huru högt watnet/ then dagen tå obſervationen ſker/ högſt ſtiger i vacuo. När man wet högden af watnet i förſta pumpningen; ſamt thet innehållet/ ſom är vti then öfra Antliæ del och vti recipienten; säger man/ ſom thet öfra Antliæ ſpatium: " har ſig til recipientens ſpatium:: ſå watuhögden: til then " nummern/ ſom när then tillagt warder til then obſerverade " högden/ får man then högſta högden/ ſom watnet kan kliſwa " til vti vacuo. Hwilken ſedermera tienar til widare räkning.

2. At weta högden af watnet i andra pumpningen; är/ ſom then öfra toma rymden/ ſom är lemnad öfrig i andra " pumpningen/ recipientens med inberäknad: har ſig til recipientes rymd:: ſå then näſtföregående högdens complement: " til denna högdens complement. Hwilket afdragit af 30 gifwer watuhögden i andra pumpningen. 2. Ef. (Fig. 7) wid förſta pumpningen har watnet ſtiait til II allenaſt/ men wid thenna til G G: är therföre proportionē; ſom IB BI + A: til A:: ſå complementet til högden IE: til GE. Hwilket afdragit af 30 gier mig högden GD. 2. Eller tager man then coniſka Antlean för ſig/ ther watnet ſtiger til X i andra pumpningen/ är proportionen; " ſom rymden XTSH + recipienten: til recipientens rymd:: " ſå ZT: til XT. Hwilket afdragit af 30 gier mig XY hög " den. Således ock med qwickſilfwer. 3. Man kunde ock ſtrax komma til watnets högd i andra pumpningen utan at ſöka thess complement, med thenna proportionen: (ſe then coniſka

Antliam). „Som Spatium Z S H och recipientens multi-„plicerad med ſpatio X S H och recipientens: har ſig til „thetta ſamma rectangulum hwaraf doch ſubtraheras reci-„pientens quadrat:: ſå har ſig 30 eller then högſta watn-eller „mercurii-ſtigande: til wafu högden X Y.

3. At weta tredie ſtigningen: man förblifwer wid „then coniſka Antliam, och ſäger; ſom then öfra toma rym-„d n recipientens med inberäknad: hafwer ſig til recipien-„ten:: ſå har ſig ock then föregående högdens complement: „til thetta: neml. ſom rymden Y T S H Recipienten: til Re-cipientens rymd:: ſå YX: til Y T. Hwilket afdragit af 30 gier retta watuhögden för 3:die pumpningen. 2. Eller wil man „ſtrax komma til watuhögden; är thet/ ſom Pyramis af the 3 „toma ſpatier, recipienten altid med inberäknad: har ſig til „then ſamma Pyramis, ſubtraherande theraf recipientens „ſpatii cub:: ſå högſta ſtigningen til retta watuhögden i then „3:die pumpningen.

4. Almennare. Som almenne reglor förſt böra ut-dragas af the enſkylta / och ſedan the enſkylta böra löpa ur the allmenna: är och wärdt ſå ock nödigt/ at en allmen regle warder giſwen. Är therför thenna / til at finna watuhögningarna i hwar pumpning. Neml. man reknar alla pumpningar / ſå många blifwa ock the toma ſpatier tillika med recipientens, multiplicera them tilſammans; Hwilket productum: har „ſig til ſamma productum, afdragande recipientens cub, „eller quadr. cub eller quadr. quadr. (recipienten bracht til „ſamma dimenſion med pumpningarna):: ſå har ſig högſta „högden i vacuo 30 eller 31: til then högden ſom watnet giör „wid then pumpningen ſom efterſöktes.

2. Annu lettare. Om man äſtundar weta högdens „complement, är för then en allmen regel: ſom thet öfra ſiſta „toma ſpatium recipienten med inberäknad: til recipien-„tens ſpatium:: ſå har ſig then föregående högdens comple-ment: til thenna högdens complement. Hwilket afdragit af 30 gier mig retta högden.

ME-

MECHANICE.

§. 2.

At finna thet samma mechanice genom linier och med tilhielp af en winckelhaka. Antlian ware giord efter behag / hafwande hwad form ofwantil / antingen Cylindriſk eller Coniſk / allenaſt ſpatium är bekant / ſom är emellan 30 foţ högden och recipienten, hwilket af Figurernas egenſkap kan inhämptas. Therjemte at man wet recipientens ſpatium: the bägge ſupponeras wara kunnige. Sedan drager man en jemntiock cylinder, ſom af then 9:de Figuren ſynes: AE är lika med 30 foţ högd. EF är thet ſpatium, ſom recipienten giör. FG är thet ſpatium, ſom ellieſt thet toma vti Antlia innehafwer från 30:de fotens högd til recipienten. Hwilka här äro lagda i en jemntiock cylinder, faſt the i the andra hafwa en coniſt eller cylindriſt Figur. Hwilkas innehåll när man wet / kan man them ſedan lempa til en jemntiock cylinder. Therföre 1. från E drages en perpendicle EB, och med winckelhaken ſå lempar / at när från A och F drages linier AB och BF, at anaeln ABF är rectus. Eller man delar FA i tw vti K, och giör KF til radium; och drager ſå en Cirkel / ſkär then af EB vti B, ſå blir ABF en rätt angel. Tager ſedan winkelhaken / och håller honom wid G, och ſtufwer theţ hörn på linien BC, tils CD blifwer lika long med BE tå är DE förſta högdens complement; och AD watnets högd.

Hwilket demonſtreras eller bewiſas kan; ty man tager här en jemntiock cylinder, hwarpå ſå recipientens ſpatium, ſom thet andra lempas; hwaraf ſker at innehållen äro lika lynta med ſidorna; ty brukar man ſidorna i ſtelle för ſpatierna. Tå ſäger man / ſom ſpatium recipientis tillika med Antlians GE: til Recipientens ſpatium EF :: ſå högſta watuhöaden AE: til högdens complement DE eller / GD: EF:: AE:: DE. Nu ſom rectangulum af the millerſta är lika med rectangulo af the ytterſta / är the EF × EA = DG × ED. ſom ock EF × EA = BE² och DE × DG = DC² och

$\overline{DC}^2 = \overline{BE}^2$ ty är ock thet öfriga som sig bör. Ytermera: Som thet är bewisat/ at i the andra pumpningar / hafwa sig högdernas complementer, som thet andra Antlians och recipientens spatium, til sielfwa recipientem: ty sinnas the/ om man brukar samma perpendicel CF, eller som thet samma är EO; och härmedelst winckelhaken och en jemnkning drager DO och FO at the stöta ihop på linien EO, och giöra en angulum rectum. Man tager sedan perpendiclen EO, och setter then från M til N, och drager från N til G, så at angulus MNG är rectus, som ock erhållas kan genom winckelhakens skufning op och ned: tå har man ME som är högdens complement i then andra pumpningen/ och MA som är watuhögden.

Bewises/ når proportionen är i then andra pumpningen/ som förbemelt är; neml. Antliæ och recipientens rymd MG: har sig til Recipientens Rymd EF. så thet första högdens complement DE. til thet andra ME. thet är MG: EF :: ME: eller $EF \times DE = MG \times MD$. thet är $EF \times DE = \overline{EO}^2 = \overline{MN}^2 = ME \times MG$. quod erat demonstrandum.

§. 3.

Til at gifwa thetta en bätre klarhet / och förstånd/ wil man ock ändraga några Arithmetiska exempel. Jag ponerar Antliam wara af coniſt Figur ofwanföre; neml. af 3 qwarters höad/ och af 3 qwarters diameter; tå theß innehåll lärer wara $8\frac{1}{2}$ kanna: eller $70\frac{2}{3}$ skålr. watn. Recipienten ponerar man hafwa 1 qwarter i diametern och $3\frac{9}{11}$ i högden; så at theß rymd bliſwer $2\frac{1}{2}$ kanna. Reckningen RT hafwer ocksä en rymd af 1 kanna: når man tå opererar efter the föregående reglor / befinner man watnet settia sig wid Z, then $19\frac{9}{11}$ fotens högd i första pumpningen.

Om man tager then andra Antliam til exempel, hwareſt man supponerar Recipientens diameter wara 2 qwarter. Högden 3. och innehållet $7\frac{5}{7}$ kannor. Sielfwa Cylindren wara af 1 alns diameter; af $1\frac{1}{2}$ höad och således innehållet 100 kannor: spatium L M F innehåller 25 kannor

Dia-

Diametern P q wara $\frac{1}{2}$ qwarter: blifwer högden af watnet $12\frac{5}{11}$ fot; eller toma rummet från högsta watustigningen $17\frac{6}{11}$ fot.

Eller om Cylindren B D wore 9 qwarter hög: diametern $\frac{1}{2}$ qwarter / och högsta stigningen / som qwickſilfret giör / wore 5 qwarter: Recipientens underſta diameter $\frac{1}{2}$ qwarter / högden $2\frac{9}{10}$ eller $\frac{15}{52}$ dels kanna / eller 41 Skålp. 142 aſſ qwickſilfwer: tå fölle qwickſilfret ned wid förſta pumpningen / tils thet ſtadngde wid $3\frac{1}{4}$ qwarters högd: lemnande öfwer ſig en högd af $5\frac{3}{4}$ qwarter. Hwilket alt af Analyſi Algebraica, med tilhielp af the föregående reglor finnes.

Som wid ſådana Antlior befinnas monga coniſka och cylindriſka ſpatier, will man för theras utmätning theſſa regler lemna. 1. Thereſt en cylinder ſettes in om en cub, ſå at then rör med ſin omkrets alla 4 cubens ſidor har ſig cuben til cylindren, ſom 14 til 11. Thet ware en cub eller ett parallelogrammum ſolidum, behåller thet doch ſamma proportion. 2. Settes en conus i bemelte cub ſom har lika högd; har ſig cuben eller parallelogrammum ſolidum til conum ſom 42 til 11. 3. Om thet giöres en cub eller ett parallelogrammum ſolidum rundt omkring en recipient, haſwande then ſamma högd / och widd ſom recipienten nedantil / är cuben til Recipienten, ſom 21 til 11. 4. En cub af en Swenſk fot innehåller 10 kannor / eller 80 Skålp. Romerſt wicht. Hwilken wicht wi i then föregående räkning hafwa brukat. 5. Ett Romerſt Skålpund ſom ock kallas medicinal wicht / håller 24 lod eller 12 uncier, eller 96 drachmer eller quintin, eller 6912 aſſ.

§. 4.

Demonſtratio. At bewiſa alt thet föregående wore för widlyftigt. Wil doch gifwa en liten anledning til then ſom ſina tanckar här på behagar wenda / och ſitt förſtånd hwetſſa. Man går til Fig. 8. hwareſt man har giordt en cylinder, c d e f g h tholig; ſamt en ſtopp B oſwanföre; nedan före en canal af mindre diameter I K N G Q. Sencker man Stoppen B ſå diupt ned ſom til f f och ſupponerar at wädret i cylindern

f i f

fIf är lika sammantryckt med thet wädret vtanföre; giutes tå watn vti canalen INKI står thet i samma högd; neml. watner på thena sidan stiger til N på andra sidan parallelt til I, efter thet är samma wäder och lika tryckning på bägge sidor. Men skiutes Stoppen BA lagre ned/ som til gg, och man åstundar hafwa en jemnwicht af watn/ som swarar theremot; säger man/ som gI: til fI :: så 30 eller 31: til NO/ drages sedan NO af 31 = PL, blifwer HN qwart. Thet är/ om man giuter watn in tile thet kommer til högden HH, stannar watnet på andra sidan wid I. Eller/ trycker man ned stocken til hh, och säger som Ih: til If:: så 31 til NQ, om 31 drages theraf/ förblifwer GN then lengden som motwichten mot wädertryckningen. Giuter man tå watn in til högden GG på thenna sidan/ stannar thet på andra sidan wid I. Eller/ om thet wore tiltäpt ofwantil och canalen tom af alt wäder/ giorde then samme wädertryckningen at watnet flefwe op til Q, tå thet contrabalancerade mot thet wid I på andra sidon. Som thetta är enligt med mongas experimenter och prof/ så följer ock theraf; at om thet ponerades/ som sagt är/ at stoppen B hade vnder sig samma wäder columne, som thet vtanföre är/ och then sedan drages högre op/ som til ee, så at wädret therigenom blefwe tynre; är proportionen som eI: til fI :: så 30 eller 31 = IK: til IE. Subtraheres sedan IE af 30/ förblifwer EK qwart; slepte man tå watn in på andra sidan/ til theß parallel L, skulle högden LK wäga jämt/ emot IK på andra sidan. Eller/ syfter man ännu högre stocken op som dd; wore proportionen dI: fI :: som IK = 31: til DI. Hwilken afdragen af 31/ förblifwer DK högden til watuklifningen: så at watuhögden mk balancerar mot watuhögden ik på andra sidan. Thetta ärgrunden til thet som förr omtalt är.

§. 5.

Om alt skal hafwa sin richtighet/ och werckstelningen swara emot räkningen; bör Antlian wid sina pumpningar/ fyllas op til bredd för än thet nedra hohlet öpnas/ at thet vndanflyter: ellest blifwer wäder stående opöfwer watnet/ hwilket ther thet intet blifwer tillagt til Antlians, blifwer profwet intet enligit med räkningen.

pag: 64.

Fig: 1.

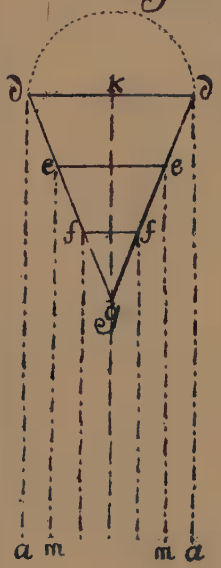


Fig: 2.

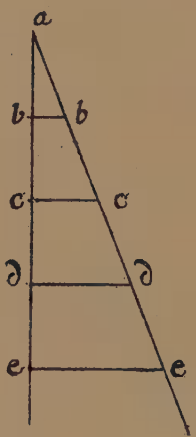


Fig: 3.

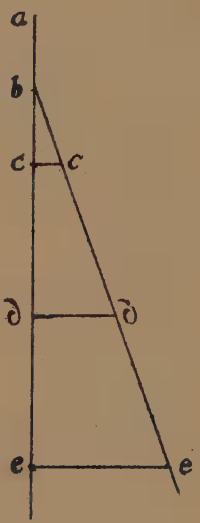
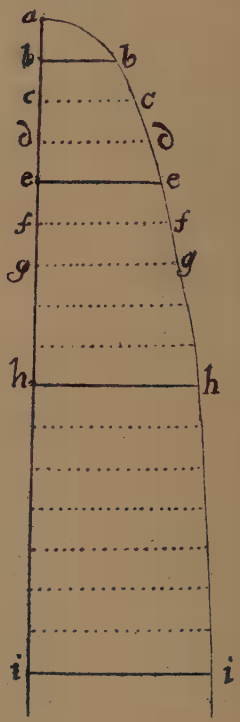


Fig: 4.



5.

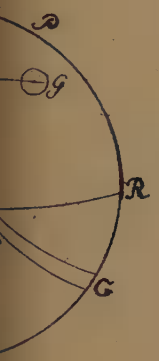
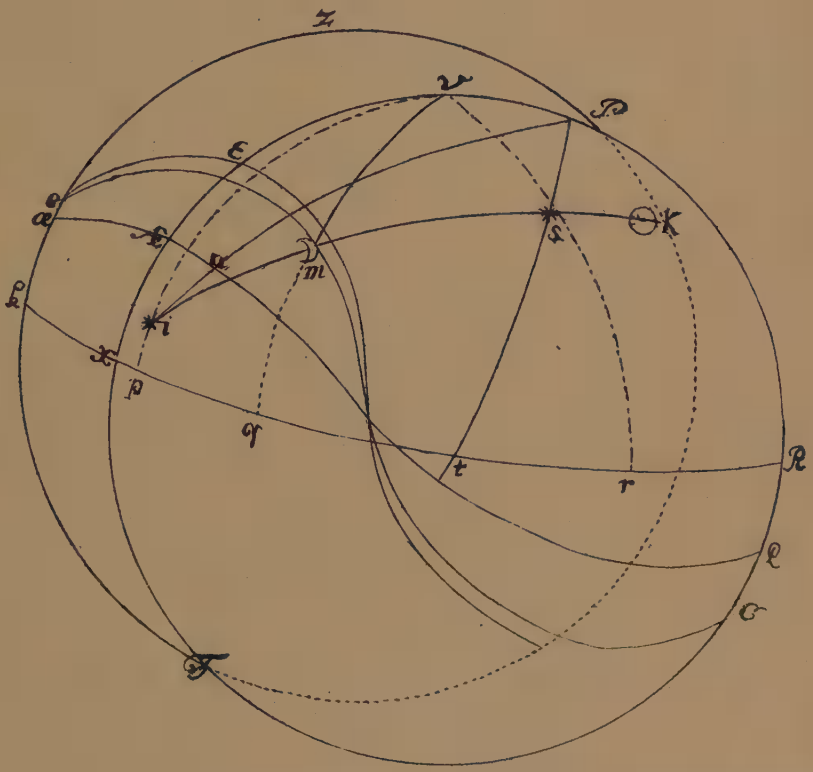


Fig: 6.



IV. DÆDALUS HYPERBOREUS.

Eller

Mathematiſka och Phyſicaliſka

Förſök/

För Octobri, Novembri och Decembri Månader 1716.

Aſſeſſor Polheimers wiſſa Anmerckningar Om wädrets Reſiſtence mot fallande tyngder och Areer.

§. 1.

SOm ock wädret har ſin letthet och tyngd med ſig/ ſå har thet i proportion til andra kroppar/ Metaller och emnen/ helſt til theras haſt och fart/ en reſiſtence; ſom nu ökar ſig/ nu minſkar ſig/ ſom kroppen blifwer tynger eller lettare/ större eller minder til. Så at man ofta finner/ at letteſta Materier, ſom trå/ ſten/ kalck/ lim/ pap/ falla med mindre reſiſtence och twång ned/ än gull/ bly och jern/ enär the ſenare hafwa mindre ſido och Aream emot ſin tyngd än the förra. Som til exempel: Im och dimma/ ſtofft/ trå-koppar- och metallrök/ kunna wäga ſemt mot wädret/ och intet ſöka en naturlig och med tyngden egenteelig fart ned åt; thet hoch dun/ fiäder och thylikt/ af 20 och 50 reſor lettare materia giöra. Storleken eller ſuperficies ſom äro om the fallande tyngder/ giöra thet allena intet/ ej heller tyngdrens ſkilnad i letthet mot wädret allena/ utan then ration ſom tyngdren och Areerna giöra tilſammans/ neml. ſom $\frac{\text{area}}{\text{pondus}}$ eller ſom $\frac{\text{pondus}}{\text{area}}$.

§. 2.

Hwad förſt areer widkommer / förſtår man ſectiones maximas Horizonti parallelas, thet är/the ſtörſta aſſkärningar ſom falla jemſidigt med Horizonten. I oval förſtås intet then aflonga omkretzen ; i Coner och ſtrutar / intet then coniſka och ſneda ; i Cylindrar, intet alt thet ſom circulairt, rundt och kullrut är / och far emot wädret : utan widden. Thet är / när man ſkär af en oval och tager aream ſectionis Horizontalis ſom utaf affkärningen härkommer / förſtås i Coner och Cylindrar theras baſes, om the falla endalengs mot wädret : i andra ſå olikformiga ſom likformiga kroppar / ſkär man them af juſt perpendicularit eller twert mot fallet i the fogningar ſom obliquitetren eller ſneddren lychras / ſå får man ſe then aream, ſom man mäter reſiſtentien efter. Orſaken är / at the ſidor ſom äro parallela eller jemnſidiga med fallet / hafwa ingen reſiſtence, ei heller the ſom falla bakom / utan the particlar och areer ſom falla perpendiculairt emot. Thet är ; om en tyngd half coniſk halt ſphæriſk fölle med ſin ſpetz förſt ned / kommer wädret perpendiculairt mot fallet ſtötande / ſom (me) (ad) : och tager man tå alla perpendiculair particlar wå ſidan (g f e d) / äro the lika med perpendiclen (k d) ; the andra falla in med linierna (me) (ad) ſom äro parallela med fallet. Kan therföre ſå ett jemnt ſom ett ojemnt ting hafwa mong 1000 åtſkillig reſiſtence i wädret / neml. ſom the liggia i wädret til / men en ſphæra eller boll en endaſt reſiſtence allenaſt / ſom hon har öfweralt en lika aream. En cub faſt enckel i form och ſkapnad / har doch 3 förändertiga reſiſtentier, utan mong twſend / ſom emellan them äro. 1. När quadrat ſidan eller fyrkanten wändes ned åt. 2. När en kant eller ägg faller fremſt och twenne ſidor obliqt och ſkiär ſig ſå genom luften / tå arean och reſiſtentien är mot then förra ſom $1\frac{3}{5}$ til 1 3. Faller ett hörn förſt / ſkär man tå cuben mitt af / ſer man aream eller reſiſtentien wara ännu mindre / neml. ſom $1\frac{1}{4}$ til 1. Theraf

flutes

flutes at terningar och cuber falla ojemnt / och intet drifwa så wißt til måhlet och til then lengd som kulor. Thet ock sagt är om andra så regulaira som irregulaira kroppar.

§. 3.

Try ting äro / som öka then rationen som area och pondus giör / som neml. öka farten och driften eller minska reſiſtentien. 1. Förſt är then inre Soliditet och tyngd / som befins i metaller: i Gull af samma caliber och ſtorlek fins 19 tyngder ſådana ſom i watnet en. I ſilfwer $10\frac{23}{70}$ ſådana wigter ſom i Ten $6\frac{5}{14}$. i ty materien i ſomliga metaller är compactare och mehr ehoptryckt än i andra; och thet i följande proportion; om en wäder-cub eller kula wäger 1 / wäger tå en cub- eller kula-watn 700 ſådana wigter. Chryſtal 1830. Ten 4450. Jern 5120. Koppar 6120. Silfwer 7230. Bly 7950. Gull 13300. Eller om en watn- eller war-cub wore 1 wigt / quintin, aſſ. &c. woge. Chryſtal $2\frac{43}{70}$ quintin, aſſ eller wigt. Ten $6\frac{5}{14}$. Jern $7\frac{33}{70}$. Koppar $8\frac{26}{35}$. Silfwer $10\frac{23}{70}$. Bly $11\frac{5}{14}$. Gull 19. neml. om alla woro af en volum, ſido eller diameter. Men tages reſiſtentierna och ſettes emot watn-cuben, ſå warda the emot Silfwer-cuben ſom $\frac{1}{20\frac{23}{70}}$. Mot Gull-cuben, ſom $\frac{1}{19}$ / och driften 19 reſor ſtörre / hwarom mera / bettre bort. 2. Thet andra / ſom ökar driften och minſkar reſiſtentien, eller thet ſom ökar rationen, ſon är emellan ream och tyngden / är när en cub eller ett oblongum giöres af ſtörre ſido; eller en ſphæra eller oval af ſtörre diameter. Ty ſetter man en trä- eller watn-cub af en tums latus hafwa 1 tyngd och 1 reſiſtence: ökes tå thes latus quadrati til 10. 20. 100. 1000. 10000 / ſå blir area minder än thes tyngd / ſom 10. 20. 100. 1000. 10000 / til (1). Och drifften ökad i ſamma ration och reſiſtentien minſkad / ſom $\frac{1}{10}$ $\frac{1}{20}$ $\frac{1}{100}$ $\frac{1}{1000}$ $\frac{1}{10000}$, mot kulan af en tums ſido.

Therföre kan en trä-eller wax-cub få samma drift och resistence, som en gull-eller bly-cub: om allenast then förras latus ökes til proportion emellan tyngdren eller minskes the senares. Så ock en wax-cub af 19 tums / eller en jern-cub af $7\frac{3}{11}$ tums sido / har lika fart och resistence med en gull-cub af en tums sido. Och om jern-och wax-cubrens sida förhögdes än mer / blef gull-cuben lettare i fall n an som wax-och jern cubren. 3. Thet 3die är / när en basis eller area behålles / men högdren och alt thet parallelt följer med fallet / ökas: som rå en basi, om man giör ett högt Oblongum, Cylindre, Pyramid eller Conum; och feller thet så at basis kommer först ned / blir arean then samma / men tyngden ökad; hwilket ock kunde giöra trä-eller watn-tyngdren i luften som bly-och silfwer. Ökes allenast en watn cub til $10\frac{3}{10}$ eller $11\frac{1}{11}$ högd och columne, hafwande hwad basin then behagar / får thet then samma tyngd med en silfwer eller bly-cub, hafwande ock samma drift i luften / om lika baser äro.

Som try ting hafwa warit orsaken til at $\frac{\text{pondus}}{\text{area}}$ har ökadt sig mer til tyngdren / än til areas; och theraf fådt större drift men mindre resistence: ty äro samma 3 ting / som minska rationen, och giöra wädrets drift större at resistera, eller förskaffa tyngden en letthet at swefwa i luften af och anneml. 1. Then lettheten / som i trä / dun / fiader och i annat finnes: tå / ju lettare the äro under samma storlek / iu större resistence finna the. 2. Om samma metaller minskas i storlek; thes cuber och oblonger hafwa mindre sido; thes sphærer och ovaler mindre diameter, blifwer thes area alt större / och tyngden alt mindre / som wäga skola emot luften. Så at om en kula eller cub af en tums diameter eller sido blifwer $\frac{1}{10}$ $\frac{1}{100}$ $\frac{1}{1000}$ $\frac{1}{10000}$ dels mindre / blifwer thes area och resistence 10. 100. 1000. 10000 reser större mot tyngden; thes drift minskad til 10. 100. 1000. 10000 reser.

Hwaraf

Hwaraf ſker / at the tyngſte metaller kunna bliſwa letare án thet minſta wáder eller æther, thereſt thet utbredes i en ſá ſtor ſuperficiem, eller deles i ſá ſmá cuber ech ſphærer, ſom wederbór. 3. Thet 3die ſettet / at draga tilſammans rationen $\frac{\text{pondus}}{\text{area}}$, och at gióra aream oenderlig ſtórre án pondus, ár at utbreda eller utſlá i en ſá ſtor ſuperficiem thet ſom har warit i en cub tilhopa: tá tyngden bliſwer then ſamma / men thes area eller ſuperficies ſtórre / tils thet kommer i jemnwicht med ſielfwa wadret.

§. 4.

Genom the oftwannámde ſetten kan thet tyngſta gull / ja om Metallen wore án ſá tung / bringas til jemwigt med then minſta wáder-eller eld-particle: och thes tyngd minſkad / at then ſógo hafwer någon ration til aream mer. Ty ſer man ett ſammanhengiande warn eller rean falla til marken; men af ſolſtrálar ſkingrad' i minſta particlar fóljer thet radios och wádret op i luften igen. Rók af metaller och af trá / faſt ſynlig / fóljer doch wádret efter / och hafwer ingen tyng ned åt. Gull och Silfwer utbakas och ſmides til en ſá ſtor ſuperficiem, at the ſwáfwa och tikſom ſimma i luften op och ned / allenaſt ſuperficies icke wendes ſnedt eller indroges i ſinus. Tager man en tums-cub-watn fór ett wißt / ſá 1 til lengd / area, cub, tyngd / ſom drift och reſiſtence, hwad mera; kan man ſettia ſádan owißt fór wißt: neml. om ſamma cubs latus ſupponeres wara delt uti $\frac{2}{10000}$ dels tum / och giordes cuber theraf / at tá hwar particle ſkulle wága lika med wádret / ſá fóljer at the tyngre metaller bóra delas i án flera cub eller ſphære-particlar, at koma i balance med wádret: en tum cub eller tum-ſphære koppar / ſom ár $8\frac{25}{33}$ gångor tyngre án watn / borde tá delas uti 675269485416752 cubulos eller ſphærulas, hwars ſida eller diameter ſkulle wara $\frac{1}{87428}$ dels tum / tá thet ſkulle bliſwa doft eller koppar-

rök af / som wore af samma letthet med wädret. Så ock gull / som är 19 resor tyngre än watn / om en tums-cub deltes uti 685900000000000 så blef hwar particle lett som en wäder-particle; Eller om thet toges $\frac{1}{190000}$ dels tum til en sida på en gull cubulum: eller om gul cuben uthamrades til 190000 tum / thet är / til en quadrat af 43 fot 6 tums sida / skulle thet expansum eller then superficies wara i jemnwicht med wädret / och med thet hafwa samma drift och resistence. Doch supponeres at superficies eller thes planum är altid parallelt med Horizonten. Thetta följer af then förra satzen / som ännu owiß är.

§. 6.

Man finner i wädret / som sades / allahanda metall-particlar, hwars binden äro oplossade. Men storleken dör göra / at the kunna blandas ihop / och wistas i en atmosphæra och rum tilsammans. Om watn-particlen wore af 1 diam. eller sida / bör Chrystall-particlen hafwa $\frac{70}{183}$ delar af samma sida eller diameter. En Ten particle af $\frac{14}{89}$ delar. En Jern-af $\frac{70}{723}$. af Bly $\frac{14}{1153}$. af gull $\frac{1}{73}$. Tå metallren kunde förenas i ett rum och i en luft tilsammans. Men komma the tilhopa i ett corpus eller til en större sida / blifwer strax en tyngd och en skilnad af.

Om the tyngre och lettare kroppars åtskilnad i fall.

§. 7.

Man ser at the lettare kroppar / eller the som hafwa mindre ration til sina åreas, falla til helften intet i then hast och til then lengd / som ett tungt. Ett sand-doft knapt til 4 a 5 fotz diup / når en sten til 16 fotz. Så ock the utbredda kroppar emot sin Superficiem, intet til $\frac{1}{2}$ thes lengd / som theras bredd och kaut skulle innom samma tid: hwilket härkommer

mer af then ration, som tyngdren haſwa til ſina areas. Ty kan man härutinnan taga ett owiſt för ett wiſt/ och ſuppone-ra, om en tums-cub watn eller war ökes til 666 gångor ſtör-re ration, at then får en foţ lengre fart i förſta min. ſ. eller om til $\frac{1}{666}$ mindre/ at then får en foţ mindre fart i förſta min. ſ. tå $\frac{1}{10000}$ eller nogare $\frac{1}{10656}$ ſådana minſkningar giöra then högſta rationen i watn och war/ bliſwande tå lett ſom wäder/ och reſiſtentien balancerar mot tyngden. Eller ock 10000 ſådana ökningar giöra at farten bliſwer 16 fot mehr i ſamma moment och min. ſ.

§. 8.

Man ſkulle tenckia at åtſkillig ſlags metall af ſtörre och mindre tyngd/ ſkulle få ſtörre och mindre fart: ett ſtycke bly ſkulle falla fortare/ än ett ſtycke trä af lika ſtorlek: hwilket ock med theorien öfwerensſtemmer; men ſom differentien ſå liten är/ kan praxis intet thet utwiſa. När man har ſuppone-rat en watn-cub eller volum haſwa en reſiſtence bakwerdz af wädret/ blef tå ett oblongum eller columne på ſamma baſi til 666 thes högd/ ſå ſkulle differentien wara en tot allenaſt i förſta min. ſ. Om en Chryſtal-kula wore af ſam-ma columne, volum eller rymd med then förra watnkulon/ ſkulle then fara litet fortare i förſta min. ſ. men allenaſt $\frac{4}{1000}$ dels fot. En Ten-kula mot $\frac{6\frac{5}{14}}{666}$ dels fot. En af jern $\frac{11\frac{1}{5}}{1000}$ dels fot. Af koppar $\frac{12\frac{1}{2}}{1000}$. Af ſilſwer $\frac{15\frac{1}{2}}{1000}$. Af bly $\frac{17}{1000}$. Af Gull $\frac{25\frac{2}{3}}{1000}$ dels fot. Nu ſom en gull-ſphære af ſamma ſtorlek med en watn-volum, intet giör ſtörre diffe-rence, än ſom $\frac{25\frac{2}{3}}{1000}$ dels fot i förſta min. ſ. Thet är alle-naſt $2\frac{1}{2}$ del af en tum/ eller $2\frac{1}{2}$ lineer, eller 25 hårs-mohner; och ännu mindre med the andra metaller, ſom

wäga

wåga mindre / och åro mindre dychtiga : ty kan ögat och sanrönen eller experimentren intet prófwat och finnat.

§. 9.

Som förr sades / ökas tyngdren och minskas the i proportion til areerna, når sphærer och cuber blifwa större eller mindre. Ty kunde en cub så ökt warda / at then intoge ett spatium af 1. 10. 16. fot diupare lengd i samma moment eller min. l. I ty om man supponerar en tums cub hafwa 1 resistence, och 666 sådana resistentier minska 1 fot; giordes tå en cub af en fotz sido / blifwer skilnaden i fallet allenast $\frac{10}{666}$ dels fot. Giordes en cub af $66\frac{2}{3}$ fot eller $11\frac{1}{30}$ Famnar i quadrat, giór thet en fotz skilnad i fallet. Eller om diametern i en sphæra ökes til $33\frac{1}{30}$ famnar / blef differentien 3 fot uti första min. l. Men som nästan ogiórligit är / at gióra prof på så stor och liten ting tilsammans / ty har man intet annat slutit practice, än att alt faller jemnt / så stort som litet / fast differentien doch nogsamt kan sees. Sammaledes / om en diameter eller cubsida watn minskas til en droppa af $\frac{1}{666}$ dels sin storlek / så minskas ock thes fall til 1 fot i första min. l. om til $\frac{1}{1998}$ / så blifwer 3 fotz minskning i första min. l.

§. 10.

Men som nästan ogiórligt är at se sanprofwen och experimentren i sådana ökta och afminskada kroppar; kan man doch lettare se them med adderade cuber op åt / med columner, cylindrar, pyramider och sådant. Tror at man skulle se stor skilnad nog / om en cub sleptes i samma moment ned med en Cylindre, stock eller kepp af 666 thes höjd: tå torde man finna in mot 1 fotz skilnad i fallet. Så ock om en tums-watn-volum utbreddes til ett expansum af 666 gånger sin tum / om thet sedan fölle emot superficiem ned / torde thet falla 1 fot mindre uti min. l. Fast the dimensioner wi hafwe antagit här för wissa åro owissa / som

som i stelle för en tums kula eller cub man bordt supponera en wida större. För 666 delar bordt kanske hafwa giordt större eller mindre ration til 1 fotz resistence. Men som thet ungefähr lärer drabba in / kan man bruka regulam falsi, och för wißt taga owißt / tils profwen wisa thet säkrare är.

§. 11.

Man skulle snart genom the förra reglor kunna bringa alla metallers areas och pondera invnder en ration; thet är / at ingen skilnad emellan them wore i fall och fart / utan så longt som thet ena / så longt for ock thet andra; så i kast / högd och perpendiculair drift / som i Horizontel / sned / och i fall. Nem. om en war-volum giordes af hwad latus eller diameter som behagades / och giordes Chrystallen af $\frac{70}{187}$. Ten af $\frac{14}{85}$. Jern af $\frac{70}{521}$. Koppar af $\frac{25}{300}$. Silfwer af $\frac{70}{723}$. Bly af $\frac{14}{149}$. Gull af $\frac{1}{19}$ delar sådana som på warn-eller war-cuben äro; så äro the alla af en ration och nature / at falla och fara i wädret / hafwande en resistence och en drift: Hwilka om the ned sleptes i ett moment, skulle the följas tett åt. Och en träkula i then proportion större / skulle fara wr ett Stycke med lika drift / som ett bly-lod i sin proportion mindre.

Om Statu Naturali, som tyngdren falla wti.

§. 12.

Ellest finnes af dagliga prof / at wädret har sin werkan på alla ting at stå them emot: hwilken stiger och faller som hastigheten ökas och minskas til. En starck force och hast i wädret / har ock en starck wärckan och drift / en mindre har en mindre. Så att ett lungt och stilla wäder synes intet doft kunna röra ifrån sitt rum; men stiger wädrets rörsel / stiger ock strax thess kraft. 1. Man finner af kulor / hwad resistence

och wädertryckning the gjöra / när the åro i sin fart; tå man hörer omkring them wäsas / och winden omföras / at then en widstående snart kunde qwäsja och omkullslå. 2. En sådan Canon-och mörsare-kula hinner knapt $\frac{2}{3}$ til then lengd emot wädret och lowen / som then hinna skulle med: och i proportion har knapt $\frac{2}{3}$ delar then andras force. Så ock med andra kulor och tyngder / som kastas mot wädret / hwilka hinna knapt til helsten af sitt mål och sin fart / som the i lungt. 3. En wärja / kepp / jernstång / om thes flata sida slås emot wädret / kan then breckas och få en resistence mot wädret / som starckare wore än wärjans jern och stål. 4. Uti starck blåst / kan qwarnwingar omföras / trän opriswas af röttren / och hus aftakas / hwad mer. Hwilken kraft är uti wädrets rörelse / som wäga kan mot en stor tyngd eller wigt. Antingen nu wädret sielft kommer i en starck rörelse / eller en tyngd i wädret / faller thet på ett ut: ty wädret har samma werckan och resistence på samma tyngd / om wädret föres 100 fot om min. s. emot tyngden; eller om tyngden i lungt wäder fördes 100 fot om min. s. mot wädret.

§. 13.

En tyngd / som fåller fritt i luften ned / får alt större resistence, tils resistentien blir så stor och starck som sielfwa tyngden; tå tyngden intet har drift mer och force at öka sin fart i samma ration som förr / utan måste sedan falla i en jemn drift; hwilket är / som wi kalle kulans Saltum Naturalem. Resistentierna tiltaga i samma ration som hastighetren / hastighetren in ratione dimidiatâ Longitudinum, ty åro resistentierna dimidiate som sidorna / thet är / the hafwa sig eswen som lengdren. Men / som sades / när resistentierna ökas / och när the intaga mer luft och wäder / tå balanceras tyngden och minskas then / tils then förlorar sin drift / at öka farten widare: Continuerar tå sin fart med en

motu

motu æquabili, så lenge rum och spatium för fallet gifwes: tå man säger kulans fall wara i sin Statu Naturali.

§. 14.

Nu som wädret werckar emot tyngdren och areerna tilsammans / ty är then förbemelta ration $\frac{\text{pondus}}{\text{area}}$, som afmåta skal tiden och lengden / innan kulun faller in statum sui naturalem. En trä-kula af samma diameter med en gull-kula faller monga minuter och famnar förr thit än thenna efter som then senare har en större wigt och tyngd at balancera emot wädrets resistence, arbeta luften undan / hålla sig i sin fart / hwad mera. Så ock en kula af större diameter faller lengre i sin ratione duplicata, och ökar sin fart / än en af en liten. Så at man bör noga tilse hwad ration en tyngd har emot aream, och therefter måta distantien, innan hon hinner til motum æquabilem eller naturalem.

§. 15.

Om man tager rationem duplicatam för giltig i alla kroppars fall; och therjemte supponerar en kula watn af 1. 2. 3. eller 16 fots diameter, hafwa i första min. s. eller i hwar 16de fots fall en resistence wäder: och som watnet är 700 reser tyngre än wädret / todras 700 sådana resistentier innan wädret kommer op mot watnet / at resistera thes hela tyngd. Ty tager man owißt för wißt / at 1 resistence är i första min. s. eller uti hwar 16de fot: och när 700 sådana resistentier bliswa mot watn / supponerar man at all kraft och tyngd i watnet afgår / som skulle öka farten; tå then måste föras sedan af ingen annan drift / än af then som watn-kulan fådt i förra tilökningarna. Af the suppositioner, som förr bemelta äro / neml. at 1 resistence är uti hwar 16de fots fall / thet är in ratione duplicata longitudinum; eller at 1 resistence är i första min. s. 4 resistentier i then 2dra / följer at watn-kulan faller $\frac{1}{4\frac{1}{2}}$ dels mil / eller 11200 fot / eller 27 min. s. tid / innan hon kommer in statum naturalem. En

koppar-kula faller $2\frac{1}{2}$ mil och 7920 fot/ eller 1 min. pr. och 18 sec. innan hon kommer in statum naturalem. Jern-kulan $1\frac{1}{2}$ mil och 920 fot/ eller 72. min. f. En silfwer-kula 3 mil och 7680 fot / eller 85 min. f. En Bly-kula $3\frac{1}{2}$ mil och 300 fot/ eller $1\frac{1}{2}$ min. pr. En Gull-kula $5\frac{3}{4}$ mil och 5100 fot / eller 1 min. pr. och 55. sec. tid / innan the komma til sin Statum Naturalem.

§. 16.

Men skulle diametren eller cub-sidorna ökas / antingen til storleken eller til högden ; så skulle ock wigtren mot areerna ökas : och i följe theraf / skulle fodras lengre tid och fart/ at få en motum æquabilem. Som/ om en Bly-kula finge 1000 resor större diameter, än sin förra; eller högden 1000 resor mot sin basin ökad / så at tyngdren mot areerna woro 1000 resor större; skulle en sådan kula falla ned och öka sin fart mot 55 min. pr. och 46 sec. eller falla 311 $\frac{1}{3}$ mil / innan then komme in statum naturalem. Eller skulle nu samma sphære eller cub minskas och utbredas til $\frac{1}{1000}$ resor mindre diup / sido eller diameter; så blefwe thes area 1000 resor större än tyngden ; då skulle thet knapt hinna til $11\frac{1}{3}$ fot/ förr än then finge en motum æquabilem eller naturalem i sin fart.

§. 17.

Här wid infalla ännu tw ting at tagas i acht / hwarmed then sidsta uträkningen kommer at inskrenckias. 1. Moste ses hwad ration är emellan aream och pondus, och således hwad fall och diup the giöra i förste min. f. man har tagit 16 för för ett wisst prof och fundament, då likwäl tyngdren ökas kunde/ tils theras fart blir 18 eller 20 fot i förste min. f. så ock minskas til 6. 8. 12. fot i samma tid : då man tager i stelle för 1 resistence thet diup som fallet giör i samma minut, och intet 16 fot jemnt. Men i metaller är ingen stor åtskiluad i tyngdren / at theraf någon stor misräkning kan härkomma.

2. Thet

2. Thet andra är/ at kulans tyngd och drift tager hwart moment af/ til thes tyngden faller sig förlorad/ at blotta driften är som giör fallet. Nu ju mindre drift/ ju mindre tilökning vti fallen. Om 100 resistentier mötte kulan/ blir hon i samma proportion minskad til sin tyngd och kraft at föröka sin fart/ tils resistentien blir then samma som sielfwa tyngden är/ tå hon har widare ingen kraft mera til någon sin påökning/ vtan blifwer æquabiliter i sin röreise. Hwaraf ses kan/ at kulan i wår luft/ giör ingen rationem duplicatam tempp. i fallen/ vtan en ration och egenskap/ som en curva har/ hwarom en annan gång/ wil Gud.

Tå man ock får widare tilfelle af föra alt vti Algebraisk räkning/ thet wi nu ändoch för generalt och wist i numrar framsatt hafwe. Samt ock handla om thet som ännu återstår om resistentien: neml. om orsakren/ at större resistence finnes emot the tyngder som falla op åt/ än the som falla ned: thet man ser af watufall/ hwilka aldrig til then högd/ som theras source, åder eder källa är/ stiga kan: thet man ock af the ting ser/ som hafwa en fiäder art eller tendinem i sig/ hwilka aldrig kan falla til samma högd tilbakars/ som the äro fallne ifrån. Ei heller en fogel/ som låter kroppen falla obliqt ned vtan wingflechtning/ och termerar then i ett moment op igen/ aldrig kan komma så högt/ vtan hielp af wingan/ som then begynt at falla ifrån. Tå man ock har tilfelle at tala om alla pendlars egenskaper/ når the falla och stiga i luften eller vti vacuo: som ock aldrig kunna bringa sig til then högd/ the fritt hafwas och swingas ifrån. Så ock om kulors drift och fart i wädret; och om orsakerna til driften; och om the ynderliga vortices som gifwa sig om alla farande och rörande ting/ som stepp och annat.

Om ratione duplicata i perpendiculair fall.

§. 18.

En ting som fallér perpendiculairt från en högd til Horizonten eller ned i en gruswo ökar sin fart hwart moment, i proportion som en area trianguli, nar tiderna gióra thes latera; thet ár; in ratione duplicata tempp. eller som Quadrata hafwa sig til radices. Att wisa hwad ratio duplicata och quadratica ár / ses af Fig. 2. Setter man tiden lika med ab. ac. ad. ae. 1. 2. 3 4. momenter, minuter, &c. se (Fig. 2) och förſta farten som Quadratum (ab), eller som Quadratum (bb); eller som Rectangulum (ab × bb): eller som area (abb); (som på ett vtkommer): Sa blifwer fallet i andra momentet från öfwerſt til nederſt/som Quadratum (ac); eller som Quadratum (cc); eller som Rectangulum (ac × cc); eller som area (acc): så ock i 3:die 4:de 5:te momentren. Neml. om tiden wore 1. 2. 3. 4. 5. 6. momm: och fallet 1 fot; thet ár i förſta $\frac{1}{4}$ dels min. ſ. tå áro fallen från öfwerſt til nederſt af hwar $\frac{1}{4}$: dels min. ſ. som 1. 4. 9. 16. 25. 36. fot; eller i samma proportion som the förras Quadrata. Eller om fallet i förſta min. ſ. ár 16 fot; ár thet från öfwerſt til fallen i hwar min. ſ. som 16. 64. 144. 256. 400. 576. Eller om minut. pr. förſt giór $1\frac{3}{7}$ mil; så áro fallen i hwart min. pr. som $1\frac{3}{7}$. $6\frac{2}{7}$. $14\frac{3}{7}$. $25\frac{3}{7}$. 40. $57\frac{3}{7}$ &c. mil. Och annorledes om andra tider/ momenter eller minuter antages; eller ock mindre eller ſtörre fall innom samma tider: så följa the doch i ordning efter proportionem duplicatam vel quadraticam temporum.

§. 19.

Men tager man hwart moment särſkilt för ſig och tilſer farten och ökningen; neml. hwad fart i 1. 2. 3. 4de momentet, ſkilde från the öfra och förra: tå áro fallen i hwart moment eller i hwar jemn tid lika som parallelerna i en triangle, thet

ár

ár som cc. dd. ee. (Fig. 3.). Eller som Hypothenusæ, bc, bd, be. Eller som tiderna i perpendiclen, bc, bd, be. Hwilka hafwa alt en ration och en progressionem arithmeticam. Och thet af orsek / at parallelerna tilsammans giöra rationem areæ, eller Quadrati eller Rectanguli cujusdam. Setter man therföre tiderna som 1. 2. 3. 4. 5. 6. fot. så äro fallen innom hwar $\frac{1}{4}$ dels minut s. som 1. 3. 5. 7. 9. 11. eller innom hwart min. s. som 16. 48. 80. 112. 144. 176. fot. Eller innom hwart min. pr. särskilt / som $1\frac{3}{5}$. $4\frac{4}{5}$. 8. $11\frac{1}{5}$. $14\frac{2}{5}$. $17\frac{3}{5}$. mil. Hwaraf ses / at i alla år en arithmetisk progression, hwilkas numeri progressivi äro 2. 32. $3\frac{1}{5}$.

§. 20.

Men setter man fallen på en perpendicle, hwilket naturellare är / som man handlar om perpendiculair fall; och giör tiderna til parallelas eller ordinatas, så giöra tiderna en Curvam parabolicam. Thet är / om fallen uti 1. 2. 3. 4de momentren woro ab. ae. ah. ai. (Fig. 4.) neml. som Quadrata 1. 2. 3. 4. Eller ab, be, eh, hi, som en arithmetisk progression; och giör en Parabolam, äro bb, ee, hh, ii, lika eller liklydande med tiderna / hwilka ock ökas i en Arithmetisk progression, som 1. 2. 3. 4. 5. Här af ses / at fallen hafwa en egenskap och likhet med en paraboliſk linea, hwilken har rationem quadraticam eller duplicatam til sina ordinatas, eller ordinatæ rationem dimidiatam til sina diametrer.

Sammaledes har thet sig med hastighetren; hwilka liklydande äro med tiderna. När dubbel tid är / är ock dubbel hastighet: så ock när trippel tid / 4:dubbel / eller 9:dubbel &c. Therföre ponerar man hwart min. s. och tager hastigheten wid slutet på första minuten s för 1. så äro hastighetren wid slutet på 2. 3. 4de momentren, som 1. 2. 3. 4. 5. 6. eller om man setter fallen jemnt / hwar fot eller hwar 16de fot för sig / enda ned åt; äro tå hastighetren som r1. r2. r3. r4. r5. r6. wid slutet på hwar fot eller 16de fot.

Ut-

Vtkast til en Machine at flyga i wädret/ af N. N.

§. 1.

AF the föregående *Assessor Polheimmers* tanckar/ finnes vträcknadt wädrets kraft och resistence mot alla ting/ så mot the som vtbredda äro/ som compacta och ihoptrengda. Af hwilket/ som af Foglarnas flycht/ kunde wara lett komma på en tancka/ at ock en Mechanique kunde påfinnas som oß kunde bära och föra i luften; och at wi icke vtestengde wore från thet öfra elementet, fast oß inga andra än förståndzens wingar äro gifna. The som förr om en sådan Dædali eller Mercurii Fabrique warit omtenckte/ hafwa satt sig ett ogiörligit principium före/ och lagt sådant i wädret til grund/ som wär Atmosphære är emot och obrukeligit: neml. stora Glober evacuerade af wäder/ som therigenom skulle få en letthet/ at kunna hielpa op så en Machine som en Icarum med. Men följer man then lefwande naturen efter/ letande efter proportionen i winaan/ som en fogel har til sin kropp/ torde wel en slik mechanique kunna påfinnas/ som oß giöra skulle hopp/ at följa fogeln i luften efter. Neml. 1. om en wagn eller båt/ eller thylikt af ett lett emne/ af korck eller af näfwer blef giord/ och ther rum för en flygande vti. 2. Sedan/ så fram til som bak til/ eller rundt omkring; ett widt vtspendt segel parallelt med machinen, hafwande invnder sig en linum eller ett stiöte/ som indragas kunde lika med segel och fockor i skepp. 3. Så ock wingar på siderna/ som föras kunde op och ned/ med en stingfiäder böjd ned åt/ at öka forcen och hastigheten thit åt/ intaga luften/ och giöra resistence så stor/ som fodras. Hwilka giöres ock af en lett materia och lagom stora/ i skapnad af fogelwingar/ ådror/ qwarnwingar eller thylikt/ snedda op åt: eller så giorda/ at the gofwo sig tilhopa i opfarten/ och vt igen i nedfarten.

4. Så

4. Så ock en balance innuder/ eller en perpendiculairt och longt ned hengiande vectis med en liten tyngd på endan / fallande juſt ifrån centro gravitatis ned under machinen ; ju lengre / ju lettare behöfwes then wara/ i ty then ſkulle hafwa ſamma ration med en bekant vecte eller pyndare. Hwilket giöra ſkulle / at ſå ofta en wittning ſker til en af 4 ſidorna / at then förde machinen i ſtånd igen. 5. Wore ock en huf öfwer wingarna eller ett ſkiul / ſom några inſecter hafwa öfwer ſina/ torde wingen hafwa ſtörre kraft ſå at öka reſiſtentien ſom at letta flechtningen med. 6. Wore nu ſådana ſegel utſpend/ ſom intaga kunde ſtort ſpatium och mycket wäder/ ſamt en balance at hålla them Horizontelt, fodrades liten kraft nog at röra ſamma machine fram och tilbakars / i ring och ſnedd ned åt: och ſedan then hade fått en drift at fara ſachta up åt / ſkulle en liten rörſel och jemn wittning behållan qwar i jemnwigt med luften / eller determinera honom hwart ut man wille. Doch ſynes wel lettare wara en ſådan machine at tala om / än at ſtellan i wercket och föran i luften ; i ty ther fodras ſtörre force och mindre tyngd til / än then ſom finnes i en menniſkio krop. Doch kunna förnemligaſt tre eller fyra requiſita hielpa under med ; neml. 1. ett ſtarkt wäder / hwilket på thylikt har en temmelig werckan ; ty i lungt giorde man bättre man hölle ſig ſtilla och nedrig wid jorden. 2. Sedan at machinen kommer fallandes eller dragen ifrån ett högt rum ; ty störſta omaket ſkulle wara at twinga ſig up ifrån Horizonten : ſkulle mycket hielpa thertil / om machinen ett ſtycke fördes i luften medelſt tog och någons tilhielp / hwilket ſå mycket giöra ſkulle ſom en ſtarck wingflechtning. 3. Bör ock ſtorleken och ſeglernas widd ſwara emot tyngden ; hwilken ſom ock forcen i wingan bör triplicate ökas i ſin ration, när tyngden duplicate, ſom Aſſeſſor Polheimer oß behagar underretta i thet följande. 4. Men at få en force i wingan ſå ſtarck ned åt / ſom i lagom ſtilla wäder wederbör / torde mechaniquen gifwa anledning til / neml. en ſtarck och ſtif ſtingfiäder / ſom när then ſleppes

fri / torde hafwa 2 a 3 personers kraft; Men kunde böias op åt genom en lett och wig mechanique, fast något longsamare. Om thessa fördelachtigheter och requisita toges i acht; torde kanske med tiden någon warg / som bättre wiste at betiena sig af wårt utkast och anledning / at giöra en tilökning sådant at werckstella / thet wi doch lemne therhån. Doch har man prof och exemple nog af naturen, at sådant sker utan fahra; som af foglar / örnar / gladar / the ther lika som simma i lusten / och med hela sin tyngd ligga på wingan / utan at röra then minsta fiäder i monga andrechter. Uti the så kallade / drakar / giörde af papper och trå / synes ock en thylik egenskap / i thet the hålla sig uppe i wädret utan then minsta senckning ned åt. Så ock torde bekant wara om en i Strägnäs / som oförwarandes föll ned från tornnet i en starck blåst / och kappan som han omför-de / frelste honom så wida at han oskadd sattes ned på marcken / hwad mera / som torde så anledning som lust gifwa widare ther-på at tenckia: fast når första profwen giöres / bör man gifwe lärspån / och på en arm eller ett been låta ankomma. Om en thylik machine skemtar ock then ingenieuse Fontenelle, sål-edes: L'art de voler ne fait encore que de naitre, il se perfectionera, & quelque jour on ira jusqu' a la Lune. Pretendons-nous avoir decouvert toutes choses, ou les avoir mises a un point, qu'on n'y puisse rien ajouter. Eh! de grace, consentons qu'il y ait encore quelque chose a faire pour les siecles à venir. Entret. sur la Pluralitè des Mondes. pag. 51. 52. Then lärde Assessor Polheimer feller ett twifwelachtigare men sådant omdome här om. „ Betreffande flychten eller flyga artificialiter, så torde „thet hafwa samma swårhet som giöra perpetuum mobile, „gull &c. artificialiter, fast thet i första anseendet tycks icke „mindre giörligit än begiärligit: men når man betrachtar saken „nogare / möter något som naturen wil förneka; såsom här / „at alla machiner ej behålla lika proportion i stort som i „smått / fast alla dehlar bliswa lika och til alla dehlar efter pro-

proportion giorda: som til exemple, faſt en kepp eller
ſtång är capable at bära ſig ſielf / ja wel någon tyngd på kö-
pet / ſå ſker thet ſamma intet i alla ſtorleker / faſt lengd och
tiocklek behålla ſin lika proportion; ty ſå ofta tyngden ſti-
ger in ratione triplicata, ſtiger ſtyrckan allenaſt in ratio-
ne duplicata, lika med ſuperficies; hwaraf ſker / at the ſtora
kroppar intet omſider kunna bära ſig ſielfwa: och efter ſielfwa
naturen pretenderar för foglar icke allenaſt en mycket lett
och ſtarck materia til fiädrar / utan ock helt andra ſenor och
ben i ſielfwa kroppen / ſom til ſtyrcka och letthet lender / hwilka i
andra kroppar intet finnes; ty kommer man ſå mycket be-
ſwärligare til then effecti luften ſom ſamma ſak fodrar / me-
delſt briſt af the behöriga materialier, ſå framt någon men-
niſkio-kropp ſkal följa machinen åt. Men wore möjeligit en
perſon kunde röra och dirigera alt hwad en ſå ſtor machine,
ſom honom bära kan / betreffar / ſå wore ſaken wunnen; doch
ſkulle man wel ſig af ett bläswäder mycket kunna betiena / om
thet ſamma wore jemnt och ſtadigt. Nog om wår Dædalo
thenna gången.

Ett experiment med en kula och papper.

MAn tager en bly kula och wecklar henne in uti ett papper /
wridandes och ſtrufwandes thet åt på ſidorna / at pap-
paret kommer tett omkring kulan / ſetter ſå kulan med ſitt pap-
per opöfwer luſet / tå man finnande warder at thet intet
afbrinner / förr än ſom kulans ſuperficies begynner på at
ſmelta. Orſaken ſynes wara / at then inre ſidan på papperet
intet kan blifwa hetare än ſielfwa blyet innanföre / efter thet
ſå tett är åtwridet; hwaraf ſker at then köld ſom innanföre
är i blyet och på kulens ſuperficie, tempererar hettan utan-
före til then grad / at then intet kan tära ſönder papperet / tils
kulan får then hetta ſom lika är med elden / thet är / at hon be-

gyner at smelta / tå elden först kan wisa sin kraft innan i från-Är therföre allenast ett temperament af kåld eller warma och starck hetta/ och en sammantryckning af bly och papper såsom til ett corpus. Men skulle papperet thet ringaste dragas ifrån blyet/ kunde straxt ingen kåld/ som kulan innehafwer/ meddelas; ty följer at thet först moste gifwa swiga.

Ett experiment om watns och snös reſiſtence mot kulor/ af Em. Sw.

Följer ett werdt experiment och prof/ at wisa hwad motstånd the letteſta ting/ som snö och watn/ kunna göra mot heftigſt fallande tyngder; som ock at wisa then lilla contactum eller skrubning som behöfwes/ at determinera en flygande kula på en sido eller snedd. Sidſtleden winter/ när litet doch jemn snö war öfwer isen qwart/ til 4 eller 5 tums tiockleck; gick jag i följe med Joh. Heſſelio med. Provinc. Veſt. vt med en refelbössa/ laddad efter wanligheten på bemelte is/ och lade en kappa 3 eller 4 fingers tiocklek ned / och therpå fremsta ändan af bössan: och syftade så juſt i snön/ til 11 alnars diſtance bort: och sedan then war afskossad/ gingo wi at se hwart vt kulan tagit wägen/ merckte ock at hon hade stuſſadt i snö och vr snö / giörande lagoma diſtantier emellan stußningarna / tils hon hunnit til 332 alnars lengd / ther wi funno henna igen i snön. Wi måtte med steg emellan stußningarna / och merckte at från mynningen til förſta stußningen war 11 steg: therifrån til then andra 33 steg. Från then 5te til then 6te woro 40: från then 6te til then 7de/ 32: til then 8de/ 25: til then 9de / 19. Från then 10de til then 11te/ 11: til then 12te 8. Från then til slutet räknades 67 steg. Och när stußningarna aftogo til små delningar / som til alnar / fot &c. kom watn emellan / doch befantz hon likaledes med then lilla forcen, hon hade qwar / hafwa hoppadt och stuſſadt therö fwer. Hwar senckning i snön war ▪ mot 1½ eller 2 finger diup/ tå kulan snedde sig op åt igen/

intet

intet rörande wid isen: hade ock förr frestadt thet samma med hagel i en diup snö / hwareft thet giorde sammaledes. Thetta prof kan gifwa wid handen mongt eftersök i naturen. 1. At the letteſta emnen / som snö och watn / hwilka knapt större reſiſtence tyckes innehafwa / än fiäder och dun / kunna i sådan hast determinera en så heftig kulo i sin fart. Och at the letteſta materier kunna få en reſiſtence alt större och större / som the hastigt röres och tryckes til / som ett tunt och dalrande löf kan reſiſtera emot en kula / och intet tillåta henna framfarten / thereft hon icke giör hohl och bryter sig sielft igenom. 2. Ju perpendiculairare til farten en ting kommer stötande mot en kulo / ju större force har kulan at trenga sig sin wäg fram / men ju snedare ju mindre; tå forcen i kulon tager af / som sinus complimenti minskas til; kraften i the mötande ting at determinera kulorna från sin linea recta ökar sig som Tangentes dragna från samma linea recta til punctum contactus, antingen ofwan eller nedantil &c. Hwaraf syns at kulan har minsta force at reſiſtera, och snön störſta at determinera, når skrubningen sker just på en sida om kulan paralelt med fallet. Hwarpå widare prof kunde giöras med en bordskifwa / som wore öfwerstruken med 3 a 4 fingers tiock ler / hållande then sedan mot kulon til alla snedder / så skal man merckia at sedan hon wrides öfwer 45 grader obliqt, at kulan intet widare går in uti leret / utan wrider och sneder ut sig / som här i snön. 3. Kan ock gie ett wackert undersök / at sedan kulan fådt en determination op åt medelſt snön / at hon intet far efter sin determinations linea, utan wrider sig til snön igen / och går så diupt in / som förr; och sedan hon åter furit op i wädret / tar åter samma curvam, farande in och ut som förr; så at hon synes hafwa twenne determinationer uti sig / en som hon fådt af kulan til sin angel / och en af snön til sin / hwilka spela i wädret på en ſuperficie och i en ſphære tilſammans / så at hon moſte göra en curvam lika som en boll på ett billard, stötande mot then andra som ligger rett wid brädet. Ty at kulan igenom egen tyngd skulle sencka sig igen / sy-

nes intet likt; når hon går med en obliq angel så ned som op/ til 2 tums diup/ och 4 Tum i lengden under snón; och sedermera har force at drifwa 300 alnar från förſta ſtußningen. Antingen nu en twefalt determination eller en ſenckning giör thet/ är doch wärdt at merckia/ huru hon wrider ſig från linea recta wid theß 1ſte/ 2de/ 3dje force. Doch kan ſynas af proportion i ſtußningarna/ at determination ſom kulan har fådt af snón/ warit ſtarckare i förſtonne/ i tu ſtußningarna trckes tiltagit och aſminſkadt ſig i en proportione continue geometricâ, ſom 40/ 32/ 25/ 19 &c. ungefar äro vti. Hwilket at underſökia lemnas the Lärda til widare.

En ny och wiß method at finna Öſtra och Weſtra Lengdren / thet är / Longitudines Locorum, ſå til Siös ſom Landz / igenom Månan: framſtelt af Eman. Swedberg.

§. 1.

MOngen torde undra på / at man wil framſtella en ny och wiß method at finna longitudinem locorum, ſå til ſiös ſom land; / genom månan : ſom doch månen wid thylikt har ſlagit felt the förnämſta Aſtronomis; i thet hwar och en / ſom tenckt ſig hafwa påfunnit Longitudinem genom månan / har thet ſyns / lika ſom månen inbillat och gifwit them en god min och gladt lynne/ at the årnå ſkulle hwad the ſökia; men ſå ſnart the hafwa ſkridit til praxin, har han giordt lika ſom glentz och löje af thet / och gifwit them ſå ett falſkt ſken för thet rätta. Så kunde ock tenckas / at ſke lärer med thenna methoden, then jag för wiſſare än the förras / driſtar mig at framte och utgifwa. Skulle ock thet kraftigt nog kunna föra alt i twifwelsmål / at hela then lär-

oa

da werlden / innom 12 secler fåfångt therpå arbetat / fast doch en stor hop lagt ther sin högsta winn / och giordt sig bry och hufwud bråk wid. Så ock / at the Lärdeste så i förra som i thetta Sæculo, som 100 resor öfwertreffa mig så i Astronomisk praxi som theorie, ännu intet hafwa funnit sig härvti. Och the som hafwa tenckt sig funnit / på sidstone hafwa doch tilstådt sina fehlachtigheter / och om intet giordt och ogillat sin egen invention. The som sades / woro the första skäl / at kasta omkull och giöra til intet the tanckar och inbillningar jag fattadt om thenna methoden, samt at gifwa androm en starck præjudice och fördöme / at intet sådant mehr påfinnas kan; och än mindre genom månan / som så mongom redan fel slagit / och them Lärdom förtagit så mong förment heder / lön och præmium.

§. 2.

Men om man tilser hwad orsaken är / at them är miszlyckadt / finnes aldeles ingen orsak i månan sielf; hwilken Gud synes thertil satt och förordnadt / at wägwisa the siöfarande: Men vti setten at observera honom. Ty wil man framdraga några the förras inventioner som föregifwa / at bäst wore finna månan til sin lengd / stelle och högd i Eccliptica, når han wistas in meridiano eller in monagesimo gradu, eller wid annalckande til en stellam fixam, hwaraf sedan Longitudo vrsinnes. Men the hafwa sielfwa funnit at praxis vtwisar ogiörligheten: i ty at rett finna punctum meridiani eller Nonagesimi, är swårt til landz / än mera til siös / ther alt hwelfwer och far nu til then ena / nu til then andra mundi plagam. Så ock at månans rum igenom Fixstiernornas distance bör i ther nogsta observeras: Och sedan genom monga trianglar beräknas. Hwarmed ock then swårhet infaller / at så månans Latitudo som Longitudo och angulus ad Solem, alt bör i acht tagas. Hwilka som the särskilt äro vnderkastade små fehl och owißheter /

ter / ty förenas owißhetren med fehlen i ett stort / når the alla räknas tilsammans: hwilket kan giöra difference af 100 mil hwad mer til siös. Thet förnämsta hinder bland alla / äro theß åtskilliga paralaxes så til latitudinem som til longitudinem och altitudinem; hwilka böra i acht tagas / så wel i utrekningar ur taflor / som wid observationren med stellis fixis.

§. 3.

Theſſa äro the rätta och sanskylliga orsaker / som ännu hafwa hindrat / at kunna hafwa månan til wägwisare til Öster och Wester. Men kunde the röjas ur wägen; kunde observationren med månan giöras ett och utan widlöftig räkning och owißhet: kunde wid första anseende månen ses i hwad gradu Eccliptiçæ then wore: Kunde Parallaxes, tå the åstundas / utan swårhet finnas: in summa: kunde stellen för månan gifwas / som inga owißheter wore underkastade / tror man / at thet som sedan åstundas / lett skulle ärnås. Thet ock Ricciolus, Kircherus och andre store Mathematici tilstå och sluta sina undersök om methodis inven. Long. med; the ther önska och hoppas / at med tiden någon framkommer / som lära skal at observera och utwisa månan / utan the föresagda hinder och swårigheter / then the förut kalla Inventorem Longitudinis. Ty wet jag intet om jag tiltror mig förmyket / at thenna method jag framstellande warder / frikalla från alla swårigheter / som the förbemelte underkastade äro: och at wid thenna är ur wägen röjd / som här tils har hindrat / med mindre månen har blifwit antagen til lychto för Siöfarande til Öster och Wester. Thet jag the Lärdas Omdöme wil i all ödmiukhet underkastadt hafwa.

§. 4.

At framstella methoden i korthet / består then thertinnan. Man utsöker sig af Tabulis Stellarum fixarum några par stiernor / som äro exact i samma Eccliptiçæ gradu: The må differera til sin Latitudinem så wida eller litet the wilja; observerer man månan komma i samma linea med ett sådant

dant Stiernpar / antingen ofwantil / nedantil eller mitt emellan / så har man vtan widare rekning / distance-och högd mätning rummet eller gradum Eccliptiçæ, som månen är vti. neml. i then samma med the bemelta stiernor. Thet är / om twenne stiernor äro i then 29. 35, gradu Arietis, som twenne i Cassiopea äro; och månen kommer i samma Cirkel eller linea med them / så ses vtan quadrant, högdmätning och widare observation månen wara i then 29. 35 graden i Ecliptica. Tager man sedan Astronomiska taflor / och calculerar tiden / när månen bordt komma til then 29. 35. grad. Longitudinis, och jemnför then med then observerade / w ser tid skilnaden Differentiam Meridianorum eller Longitudinem loci från rummet / ther räkningen och taflorna är giorda ifrån.

Thet första och letteſta sett / at finna accurat här igenom Longitudinem.

§. 5.

At giöra wår method lett och wig för the Siöfarande / wil man framstella twenne wägar. Then förste / som är letteſt / moste hafwa sig til hielp andras omak och vträkning / samt ett och annat instrument. Neml. 1. Ett litet Vhr eller Horologium portatile, therpå man kan ſtella klåckan och tiden efter Solen eller Stiernorna / när ſom behöfwes; åtminſtone så accurate, at thet intet merckeligit fehl kan giöra innom 1 eller 2 timars tid. 2. Ett Instrument at afmåta anglar på himmelen med / sådant ſom af Hevelio eller af Ricciolo beſkrifwes. 3. Endr man wet 10 a 20 par ſtiernor / ſom hafwa samma Longitudinem, at man giör förut Ephimerides eller taflor för 1 eller 2 åhr / hwad tid och minut månen kommer til ſtiernornas gradum Eccliptiçæ. Har man theſſa try i beredſkap / faller observation ſedan lettare / än någon ſin at ſöka polhögoren och annat / ſom för lett ſkattas.

§. 6.

Operationen är således : när man mercker at månen nalkas til then Circulum Latitudinis som Stiernorna äro uti. 1. Så ställer man först sitt lilla uhr efter tiden / tagande then af Solen dagen förut / eller tå af wissa Stiernor / som them Siöfarande bekant är. 2. Har man en sticke- eller tagel enda wid handen / utspendes then antingen emellan tu finger / eller i en boga / och hålles endalengz efter bägge Stiernorna / til thes månen går med sitt centro emellan samma stiernor / eller inuti samma lineam med them. 3. Tå ser man strax på uhret hwad klockan är / och tager Ephimerides och jemnförer then tiden med thenna / så gifwer tidskilnaden differentiam Meridianorum, en tima giörande i 50 Swenska mil inmot. 4. När skeppet far wäster ut med Solen / går tiden förr ; när öster ut eller emot Solen / går tiden senre / från then ort man setter första Meridian.

§. 7.

At finna behendigt Parallaxin Lunæ secundum Longitudinem, brukar man Instrumentum Hevelianum eller en annars at taga anaier med. Först at wisa hwad angel bör tagas. Får Zenith (Fig. 5.), G är Polus Eccliptícæ, ✱ ✱ äro bägge Stiernorna i samma gradu Longitudinis, angeln (a b c) är rätwinckiad. Ty fordras allenast angeln a c b, then man strax kan taga igenom instrumentet, låtande thet hengia perpendiculairt och syftande thermed til månan; och i thet / föres andre armen til then öfra ✱ eller stiernan : så får man angeln (a c b), then wi kalle angulum subparallacticum. Så har man strax uti (a c b) en lett / redig och klar triangle ; man har (a c) Parallaxin altitudinis, (genom månans högd) : och a c b then observerada angeln, och (a b c) then räta; tå man genom bara Sinus kan finna (a b) Parallaxin Longitudinis, eller punctum (a) thet rätta månans rum: then man afförer eller tillegger til then Eccliptícæ graden, som Stiernan eller månen är uti / och theß tilhöriga tid / hafwande så alt thet man welat sökt.

§. 8.

§. 8.

Thetta är hela operationen at finna Locorum Longitudinem och then rätta månans grad igen. Then man i thet föregående har vtgifwit för thet letteſta ſett/ och fri från ſwårigheter/ ſom andra methoder vnderkaſtade äro; hwilcket ock man hwar för ſig ſärſkilt wil framwiſa.

1. Then förſta letthet beſtår ther vti/ at kunna finna härigenom månans rum i Eccliptica, vtan någon obſervation, annan/ än then med ögonen och ſilekes ändan ſker. Tå man ellieſt hade af nöden haft/ bruka quadrant, taga några högder/ ſå ock diſtantier från en eller annan ſidſtierno; och ſedan vtredt ſig af monga ſphæriſka trianglar, at få månans ſå Longitudinem ſom Latitudinem oc Parallaxes i ſtånd.

2. Wid thenna wår kan Parallaxis igenfinnas/ ſå ock vträknas letture än wid nåaon annan giörlig method, allenaſt genom ett Triangulum Rectangulum och blotta Sinus. Ty faller man i ingen oſakerhet igenom en vträkning at finna ſå Longitudinis ſom Latitudinis Parallaxes, och igenom vtſökning af Solens grad, Meridiani eller Puncti Culminantis, och Nonageſimi, at få angulum parallacticum: och på ſlutet ſielfwa Parallaxes genom vtredning af en ſwårare triangel än wår. Här giör månans högd och Inſtrumentum anguli capiendi på en gång alt thet ſom förbemelt är. Giör ock litet eller intet til ſaken om begge obſervationerne äro af en Aſtronomiſk noghet til tid eller til obſervation, efter ſom Parallaxis altitudinis differerar ganſka litet på en grad när/ mot några ſecunder allenaſt; och ſedan är Triangulum Parallacticum ſå litet och inſkrenckt/ at om then obſerverade angeln (a c b) icke ſlår in på ½ eller 1 grad när/ ſkulle en åtſkilnad af några ſecunder allenaſt giöra differentien vti Parallaxi Longitudinis. Thet wåre Aſtronomi wel ock wetat/ när the giöra then ena angeln rätwincklad/ ſom doch bör hafwa en minſkning eller en liten tilökning af månans Latitudine öfwer eller vnder Ecclipticam.

3. Har man ock then största letthet at finna af Stiernorna/ når Parallaxes Longitudinis böra leggias til eller dragas af/ eller bliftwa til intet. När stiern-paret står enda op och ned/ thet är/ in linea verticali, tå är then Gradus Eccliptiçæ som Stiernorna beſittia / juſt Nonageſimus: och om tå månen wore i ſamma linea med them / wore then ock vti ſamma Nonageſimo och vtan all parallaxi in Longitudinem: tå man hwarken haſwer af nöden at taga månans högd / eller bruka inſtrumentet, eller göra någon Calculation, vtan ſe blotta Conjunction med ögonen och ſilckes endan. Men fölle the bemelte Stiernor ſnedt ned för himmelen / ſom från vertice til höger/ ſedan the ſtådt i ſin gradu Nonageſimo, tå kommer Parallaxis Longitudinis at leggias til. Men falla the obliqt til wenſter / förr än the kommit til verticem, och giordt ſin gradum til Nonageſimum, afdrages Parallaxis Longitudinis. Thet at bewiſa är lett / i ty Nonageſimus är tå / når Polus Eccliptiçæ och Horizontis eller Zenith, äro i ſamma Cirkel tilhopa; Circulus Latitudinis i ſamma Azimuth, och Azimuth i ſamma Circulo Latitudinis; och falla tå begge Cirklarne ehop / ſå ad angulum rectum på Eccliptiçam, ſom ad angulum rectum på Horizontem; ty moſte för oß på Horizonten ſtiernorna ſtå i en linea rätt op / och theras gradus wara Nonageſimus: och theß vtom falla ſnedwertz.

4. Ellieſt finnes wid ſådana obſerva ioner lika ſom en Eccliplis igen/ och har man här alt / ſom wid andra Conjunctioner i acht at taga; tå all then accurateſſe man lärdt wid them / kan ock här brukelig wara; ſå at finna digitos Ecclipticos, ſom månans immerſion och emerſion. Brukar man allenaſt ſilcket och ögonen / och ſer til når månen begynner at falla in med ſin hörn eller Circumference vti Stiernraden / thet är / vti Eccliptiçæ punctum. Och når Immerſion är ſkedd til helſten / til en wiß Lunæ ſinum eller montem, ther man wet centrum wara / tå är tider göra ob-

obſervation, ſe på vhret / och taga högden. Strax ſedan kan merkias theß aftagning och emerſion, til digitos eller pollices, eller til andra delar ſom månans diameter afſkäres vti. Nu ſom the endaſta ſetten här tils hafwa warit igenom månans och Jovialium Ecclipſes, at finna Longitudinem Locorum til landz; ſå giſwer likheten thet hopp / at ock thenna bliſwer anſedd för ett ſanſkylt ſett.

5. Thet femte är / at Latitudo Lunæ är intet af nöden här at achtas / vtan allena theß Longitudo, ſom ſå ſes ſom finnes. Hwilket giör en ſtor del til lettheten / ſå i vtreckningen / ſom ellieſt i obſervationen. Helſt ſom wid månans Latitudo en ſtor owißhet inlöper / at weta then ſtörſta och minſta / och huru ſtor then i quadraturis, conjunctionibus eller annorſtädes är; ſamt at weta theß flyttning tillika med nodis. Tå Latitudo för ſig allena kunde ſetta månan vtur ſitt ſiånd och ſtelle mot 6 a 8 min. pr. ſom wid Ecclipſes ſå Solens ſom Stiernornas; faſt then är mindre i ſig ſielft: och i följe theraf giöra 3 a 4 graders difference i Æquatore, thet är 30 a 40 Swenſka mil.

6. Kommer ock thertil / at man har lettare för at vtrekna månan / och giöra Ephimerides til wiſſa puncter vti Ecclíptica eller til ſådana Fixſtiernor / än til Meridian eller til en Stiernas Ecclipſin, hwad mer. I ty har fodras allenaſt månans Longitudo eller motus Periodicus. Har man en gång fått fatt på månan til en punctum Ecclipticæ i taflorna / legger man ſedan til allenaſt theß 3 anomalier, ſå har man ſtraxt tiden för then andra / oachtande ſå theß latitudine ſom theß angel med Solen hwad mera / ſom giöra motum ſynodicum ſwår.

7. Lärer ock antahlet giſwa wid handen / at ſådana obſervationer ſke kunna ofta nog. Toge man ſig tid at vtleta af Tabulis ſtellarum fixarum alla the Stiernpar / ſom tienlig woro til wårt propos, torde öfwer nog och behof finnas. I förſta tilſeende befans theſſa: Twenne i Caſſiopea, neml.

in capite, och theß Lucida Cathedræ af 29. 35. V begge. I Andromeda och Caſſiopeæ gyro umbilici twenne af 37. 52. Vti Triangeln twå af 38. 18½. I Piſcibus twå / af 22. 16. I Cynoſura och Urſa Majori twå af 112. 29. En ännu vti Urſa Majori och en i Argonavi af 119 begge. En vti Urſa Majori och en vti Cancro af 122. 57. Twenne vti Twillingarna af 109. 6. Twenne vti Orione, och ännu thertil en vti Hydra, alla tre af 119. 44. The ſleſta äro af 2. 3. 4. magn. Wille man bruka mehr flit och efterſök / ſkulle finnas ett nitreckeligait antahl. Och wore önſkeligit man hade then lärda FLAMSTEDTS Tabulas ſtellarum fixarum hos oß i Swergie / ſom har bracht alla ſtiernor genom egen obſervation accurat i ſin rum / och ſatt them i ordning efter ſin Aſcenſionem Rectam, eller ſom the följa hwarandra efter til meridian: ther man wid förſta ögnableckren mot 100 par torde finna / och i thet rum the nu i wår himmel äro vti.

Man har welat theſſa lettheter bifoga / theß bättre at ſe differentien i methodren: doch intet til förklening ti någon theras the förras / eller til ophögning af wår: utan til ett bewis / at Meridian til ſiös kan ärnås / utan någon at the ſwårigheter / ſom här tils förhindrat hafwa / at månen kunna ſtådt oß bi wid ſådana angelägenheter.

Thet andra ſettet / at finna Differentiam Meridianorum eller Longitudines loci, genom the ſamma förbemelta Stiernor.

§. 9.

Doch ſom wi hafwe i thet föregående fodrat några requiſita och andras arbeten / til att letta theras omak /, ſom obſervera Longitudinem; neml. ett inſtrument at afmå-

ta

ta anglarna med; som ett litet förligit vhr / thet man ſtella bör efter rummets Horizont, Himmel och Meridian. Så ock giorda Ephimerides Periodicas at ſtraxt ſe tidren vr / når månen faller in vti Stiernraden. Men ſom theſſa requiſita torde giſwa mongom rum och emne til att tenckia / at thenna methoden bygges therigenom på en owiſshet / på ett owiſst inſtrument, vhr / och på pol högden ; ſamt at then giöres lett förmedelſt andras omak ; vtom hwilcka torde menas thet intet angå. Så wil man framwiſa en annan ginwägg genom ſamma Stiernor at komma til bemelte Longitudinis notitiam, vtan någon af the 3 requiſitis.

§. 10.

Förſt framſetter jag en ſphæriſk Figure (Fig. 6.); hwilken bör noga öfwerwägas ſå til theß Cirklar ſom Trianglar: tå man ſedan förmodar methoden wara vtan all obſcuritet och ſwårhet. 1. Then ſtörſta Circkeln Z T P är Meridian i thet rummet / ther Aſtronomiſka taflorna äro giorda. 2. P V E X T R är then Meridian, ſom Skeppet och then Siöfarande kommer til / når then wil anſtella ſin obſervation. 3. X R är theß Horizont. V theß Zenith. Z then förra Horizontens Zenith eller Pole. 4. æ Æ Q är Æquator, P theß Pole eller polſtiernan. 5. e E C är Eccliptica eller Zodiacus, thet är wägen / ſom månen giör ; theß pole är K, hwilken tager en liten Tour och Circkel om then retta Eccliptiſka Polen, och thet i anſeende til Nodernas flyttning. 6. k z m ı är Circulus Latitudinis, ſom Stiernorna och Månen äro vti. 7. p ✱. q ☽. r ✱. eller p ı. qm. rz. äro Högderna på Månan och Stiernorna från Horizonten, tagna genom Quadranten. 8. P u ✱ och P ✱ t wiſa theras declinationer och aſcenſionem rectam. Om theſſa bogar och Circklar bör man förſt ſkaffa ſig en klar och redig idee, förr än man ſkrider til thet följande.

§. 11.

Nu förän man anſteller obſervationen, fodras ock

här

här try ting at vtrecknas / doch sådana som en Astronomus, eller Himmel-och Siö-förfaren Skeppare plägar wara hema vti. När han har vtwaldt sig wissa Stieruor / som äro i samma Minuto Eccliptiæ, och wentar månan komma til them / vtreknar han först 1. af Tabulis Astronomicis tiden / efter sett som förbemelt är / inter annat achtande än th β Longitudinem secundum Ecclipticam. 2. När man har fått tiden / är thet andra / at han tager then vndra eller öfra stiernan / och ser til huru longt then är ifrån Meridian wid samma tid; som allenast genom en simple subtraction eller addition sker / neml. at finna bogan (uæ). 3. Fodras at man för sig sielft vtrecknar angeln P ✱ ✱ eller P 12. Som sker igenom blotta sinus; efter man har 4 ting i samma triangel bekanta / neml. (1P) och (.P) Stiernornas Complementa Declinationum til 90. (✱P✱) eller (ut) Stiernornas differentia ascensionis rectæ: och bogan ✱ ✱ / theras differentia Latitudinis. Ty finner man igenom sinus angeln P 12: hwilcken sedan altid tienlig är / när han är en gång vträknad. Thessa 3 ting böra först giöras och anskaffas / medan man afwachter månan komma til sin Conjunction. Eller ock / om thet för högt wore för en Skeppare / torde en Astronomus i thet första lisa hans omak genom 1 eller 2 åhrs vträkning. The tv öfriga kunde ock för bettre reda skul wid samma Ephimerides bifogas. Eller om så behagas / then sidsta angeln kunde få sitt rum bland Longitudines och Latitudines i sina taflor / hwar vr then sedan kunde vtan rekning hemtas.

§. 12.

Sedan består hela observationen thervtinnan / at man igenom en Tagel-eller Silckes-enda tilser / när månans Centrum går in vti Circkeln eller linien med begge Stiernorna. Skulle icke alt innom minuten ske / kan theraf och ingen merckelig fehlachtighet herkomma.

§. 13.

At nu finna Longitudinem eller Differentiam Meridianorum

dianorum af thet som observeradt är. Man har fått först Högdrenas Complimenta 1V. ☽V. 2V. Tå allenast twenne anglar fodras at utrekna. Then förſta är V1P, then andra är / 1PV, som är ſielfwa angulus Differentiæ Meridianorum. 1. Uti triangeln 1V2 har man twenne complementa altitudinis bekanta / och * * Differentiam Latitudinum, ſå finner man angeln V12; hwilcken drages af then förr uträknada och utſökta angeln P12; ty har man angeln V1P; ſom efterfrågades. 2. At finna then andra / ſom ſkal wiſa ut Differentiam Meridianorum: uti Triangulo V1P, har man angeln V1P nu funnen / ſå ock V1 complement. altitudinis: P1 complement: declinationis, ſå får man VP1, thet är / arcum uÆ. Drages ſå then ſamma arcus uÆ af then förr fundna (u æ), ſå har man arcum æÆ, thet är Differentiam Meridianorum in gradibus Æquatoris: hwilka reducerade til tid eller mil gifwa thet ſom åſtundas.

At retta thenna undersökning igenom Parallaxin: Man har redan i thet föregående fått angeln V12: och fått complementum altitudinis V1 af obſervation, ſå ock Vm: ty finner man igenom Sinus angeln V☽1 / eller theſs complementum til 180 / angeln V☽1; thet är / Angulum ſubparalacticum: hwar igenom man har parallaxin Longitudinis, ſom förr / at leggia til eller draga af then ſedda månans lengd / alt efter ſom Stiernornas ſtånd och obliquitet utwiſar. Hwilcket är alt thet ſom fodras / at finna Öſtra och Wäſtra Rummen til ſiös och til lands.

§. 14.

Doch om man förut wille ſökia polhögden / ſkulle operation ännu blifwit behendigare; tå man ei heller ſkulle haft af nöden tre högd-mätningar. Eller om man wille taga diſtantien emellan månan och enthera Stiernon / medelſt en radium, ſkulle methoden och utrekningen än pröfwas lettare. Men man har welat framſtella then på ſådant ſett ſom bruke-

 ligen

ligen ſker med en Quadrant, med högdmåtningar från Horizonten; på thet intet owanligit må finnas ſå til ſiös ſom landz/ utom thet man här tils ſatt bruk och lit uppå. Ty framſtelles thet maneer, ſom ſwåraſt är at finna Longitudinem med genom ſådana ſtiernor; faſt man wil hafwa thet ſå förſtådt/ at man tager an the lettare ſetten och helſt thet förſta/ och thetta ſenare allenaſt i nödfal brukar.

§. 15.

Befinnas doch wid thenna ſenare några förmohner/ mer än wid then förra methoden, faſt then förras thit ock lempas och föras kunna: Som 1. At intet hafwa af nöden ſökia Polens högd/ til then Horizont och Meridian man obſerverar under/ hwilket ingen ringa fördel är. 2. Ei heller af ſökia tiden at ſtella uhret efter; ſom man hafwer ſtraxt differentiam meridianorum in gradibus æquatoris, then man ſtraxt uti mil eller uti tid kan bringa. 3. Ei heller af nöden ett inſtrument, ſom intet brukeligit och än wedertagit är. 4. Så ock om någon ſkilnad ſkulle ſke i tiden wid högdmåtningarna/ med mindre the alle toges i ett moment och Hui/ giorde thet doch litet eller intet til ſaken. 5. At få the 3 requiſita, är ei heller någon ſwårhet; neml. när man har tiden at finna en ſtiernas diſtance ifrån meridian. ſå ock en angel ex 4 datis: Ei heller ſedan finna Longitudinem genom 2 a 3 anglars oplöſning. 6. Lärer therföre hafwa lönt möden/ och Aſtronomi intet ſin tid och flit fåfengt anwendt/ i thet the ſå mången natt ſomnlöſt arbetat/ at få the minſta ſtiernor ſå på papperet ſom i himmelen ſatta: hwilka ellieſt til ingen nytto kunde anwända warda/ om icke en Methode i liuſet framkomme/ ſom lärde giöra nytto och gagn af them. Therföre at ſå mer och mer förmohn af wår accurata Stiern-himmel/ ſkal med tiden andra nödigheter/ af ſåledz ſtelta ſtiernor/ ock wid handen giſwas. NB. Ett allenaſt til ſlut at nemna/ neml. at kunna få rett meridianum eller middags linien igen/ ſå til ſiös ſom landz/ at retta Compaſſer och ſettia

Qua-

Quadranter efter / hwad mera; kan ſke lettaſt igenom twenne Stiernor af en Aſcenſione recta: tå the ſtå op och ned eller i ſemn linea med en hengiande ſilckes enda / äro the tå begge ſom accurataſt vti meridiano; hwarom vtförligare en annan gång / wil Gud.

§. 16.

Doch förr än man i wercket kan ſtella wår invention at finna Longitudinem med / bör man hafwa accurata och noga taflor på alla Stiernors Longitudines, Latitudines, Aſcenſiones rectas och Declinationes: them man wentar af then Lärda och förfarna FLAMSTEDT vti England Hwilken redan för 4 åhr ſedan hade thet vnder hendren / och nu lärer frambracht thet i liuſet / faſt the ännu intet äro oß tilhanda komne. När man får tilfelle them at conſulera, återſtår allenaſt at fortfara i thet ſom nu påbegynt är. Emedlertid förſäkrar jag mig / at Longitudo Locorum genom thenna Method påfinnas kan: och ſer ännu intet ſkiäl / ſom omkullkaſtar och giör om intet thenna förſäkran / annat än the Aſtronomiſka taflors owißhet wid månans lopp: Hwilket för altzintet ſkäl antages / ſom ännu ingen Aſtronomus, med mitt wett / thet brukat / at kullkaſta the Förras Förſök / ſom welat igenom Månan finna Longitudines Cœleſtes och Terreſtres.

DÆDALUS V.

För

Januarii, Februarii, Martii Månader

åhr 1717.

Beſkrifwen af

Em. Swedberg.

o

Commercie Rådet *POLHEIMERS* Konstige Tapp.

HÄr framstelles en ny invention af en Tapp/ som för sin konst så wäl som dygd lärer wara bekant/ och af en del redan med nöje och fördehl brukad. Dygden består förnemligast ther wti/ at then hemmar några pigors och drengars lysta/ som när tilfelle gies/ tappar ofta bredewid til sin och the sinas fördehl så mycket som til matmodrens/ giörande sig glada och lustiga på sin Herras omkostnad. Men/ som sades/ thenna machinen tiänar at hemma alt sådant wnderslef och otidighet/ settiande lika som lås och stengsel för thet: i ty när matmodren behagar stella sin nyckel och gifwa then källardrengen i hender/ kan hon sedan wara trygg och säker/ at intet watn rinner brede wid qwarnen: och om annorlunda skedde/ skulle strax kerlet bära märcke för sig. Hwar af letteligen kan slutas/ at theß nytta så stor är som theß konst/ och konsten så stor som nyttan/ fast then af then gemenare hopen lärer mißlikas. Theß wtwertes form är af en stor del redan bekant/ men som konsten än är fördold och ligger inwti/ så wil man härmed öpna then och framstella alla theß delar så tilhopa som serskilt/ och wisa hwarest then mechaniska winbesparningen ligger giömd/ som förmehnar tienstfolcket sin lust och åstundan.

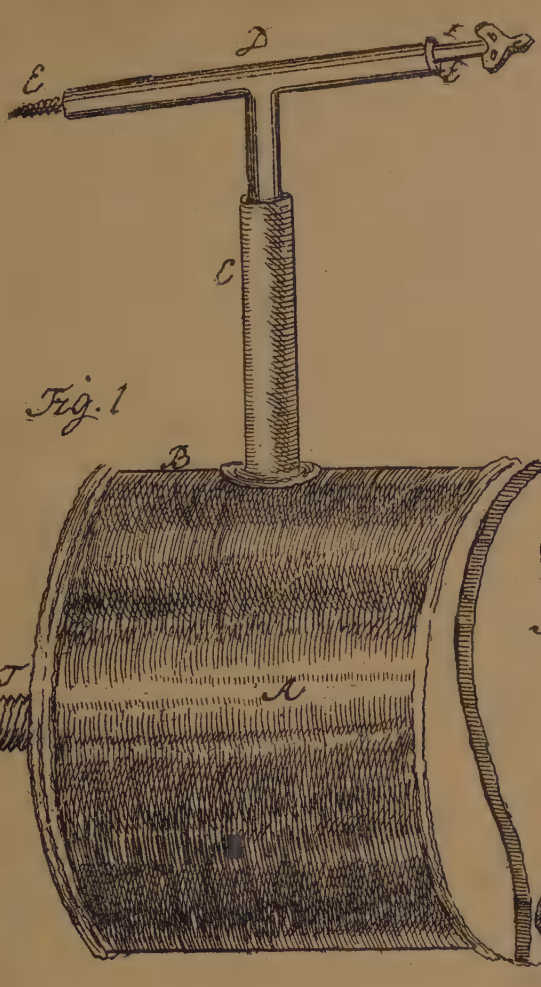


Fig. 1

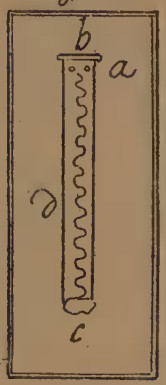


Fig. 15

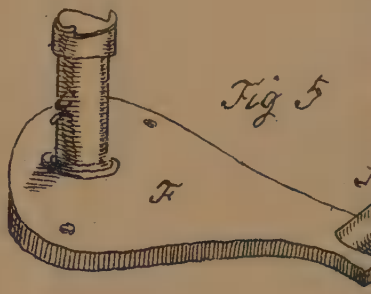


Fig. 5

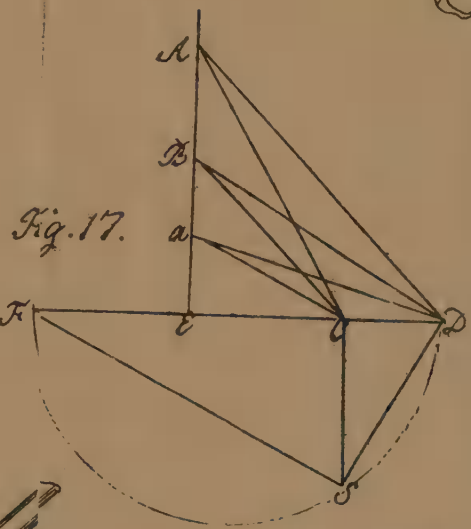


Fig. 17.

Fig. 13

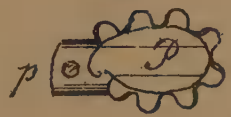


Fig. 14

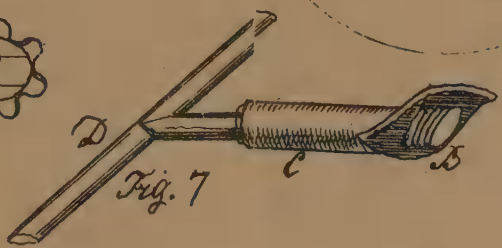
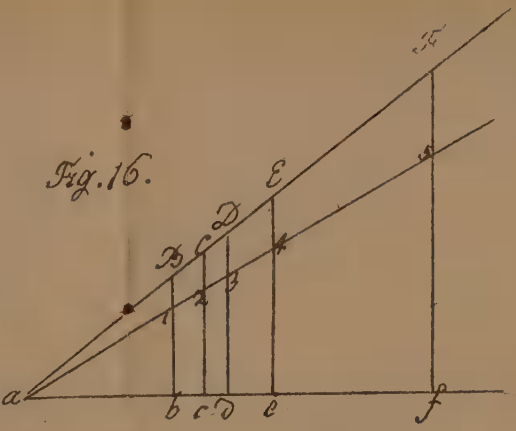


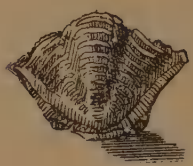
Fig. 7

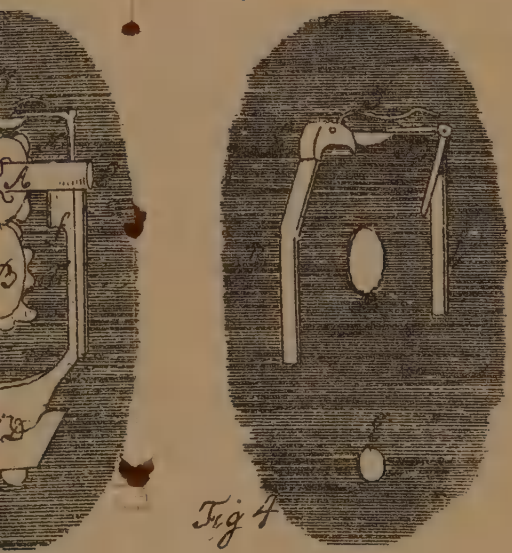
Fig. 9.

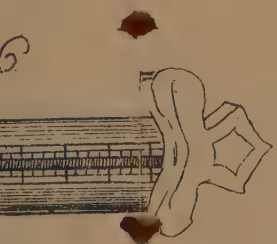
Fig. 8

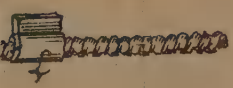
Fig. 101.











CHRIST. POLHEIMERI Consil. Commerc.

Ingeniosa Fabrica Siphunculi, quo dolia possint obserari.

TRaditur hic nova fabrica Siphunculi cadis vinariis applicandi, qui jamdudum, ut putem, vulgo notissimus est, quia cum voluptate multorum & emolumento usitatus, pollet enim simul arte simul virtute. Virtus ejus præcipua in eo consistit, quod ejus ope famulantium libido refrænari possit, qui oblatâ quâlibet occasione a se neutiquam impetrent, quo minus insciâ & invitâ matrefamilias de cadis quantum eis volupe sit, eliciant, clamque in cellis, heri sui deliciis fruantur. Unde siphunculus hic novus excogitatus factusque est instar seræ, quâ obturari possint vina, & fallaciæ solitæque famulantium libidines inhiberi. Ita enim constructus est, ut materfamilias clavem ejus ad arbitrium suum disponere, dispositamque dein cellariæ vel suppromo tradere, cum plena permissione, ut e cado, quantum libeat liceatque, exhauriat: Interim poterit illa ingenio siphunculi freta secure inter convivas versari, & tuta esse, ne quid aquæ, dormiente molitrice, præterfluat. Si more & libidine suâ ductus cellarius usque aliquid e vase in via hausisset, manifestus fieret dolus ejus, nam indicium ejus vas ipsum præferret. Unde vides utilitatem superare artem, artemque vicissim utilitatem, placiturumque esse multis, at multis, ut turbæ viliori, displiciturum. Externa ejus facies nota, jamdudum est, sed quia ars ejus intus delitescens occulitur adhuc, mens est illum aperire, apertique partes tam conjunctim quam singillatim exponere, & præcipue tenacem illum promum Condum, nam aliquis vulgo putari potuisset intus latere, in lucem proferre.

1. Hela tappen med alt sitt tilbehör wises uti Fig. I. then delen som är inåt tunnan har twenne skrufwar at festas med / nemligen T och E. Skrufwen E insettes medelst en nyckel Z. A är sielfwa rymden som innehåller ett ½ stop. B C är swickan. L är nyckeln som kan ställas efter behag. G är theß foder. K är hohlet ther dricka rinner ut. F är ett foder för några små hiul som serskilt äro affatta. Här af ses at tappen är lika som en serskilt liten tunna för sig / försedd med rymd/ swicka/ nyckel &c. som kan hemta af then större så mycket som begiäres.

2. Mitt igenom tappen går ett rör / och räcker litet utom / som ses af Fig. 9. som på ena endan har en skruf om sig at festas i tunnan med / på andra ett litet hohl wid (d) / hwarigenom dricka kan utlöpa när ther öpnas.

3. Swickan C är så giord som ses af Fig. 7. försedd med en skruf på ena endan B at kunna festas med i tappen/ samt med en korck insatter / så at antingen litet rum för wäder är omkring/ eller henger på en fiäder eller ståltrå/ at kunna öpna sig när winet flyter undan och wäder fodras i stelle. Twertz öfwer then samma går en annan ihohlig canal D.

4. Om man nu wil festa öfra endan wid tunnan/ sker thet medelst then lilla skrufwen Fig. 8. ach nyckeln Fig. 11. Legges nu skrufwen E in uti röret D Fig. 7. och nyckeln applicerad

til

1. Qualis ſit ſiphunculus cum omnibus ſuis requiſitis, repræſentatum eſt Fig. I. pars ejus cadum reſpiciens inſtructa eſt lineis ſpiralibus binisq; cochleis T & E. Cochlea E in cadum intrudi poteſt mediante clave Z. A eſt ſpatium cavum capacitatis ¼ partis canthari Svec. BC eſt valvula vel piſtillum quale in doliis uſurpatur cum admittendus eſt aër in liquoris defluxi cavitatem. L eſt clavis ad arbitrium heræ disponenda. G eſt operculum ejus. K eſt foramen per quod vinum effluet. F eſt operimentum rotulas & tendines, quos alibi ſingillatim expoſui, tegens. Ex his videre licet ſiphunculum non abſimilem eſſe minori cuidam dolio, inſtructo non modo ſpatio, piſtillo ſed & clave &c. queis mediantibus latex e vaſe majori per hoc minus, ad menſuram deſideratam, nec ultra, elici poterit.

2. Per medium ſiphunculum transit fiſtula quædam, quam videre eſt Fig 9. cujus extimam partem lineæ ſpirales circumductæ ſunt; quarum ope firmatur machina ad dolium, a parte ejus alterâ parvula patet apertura, ad (d), per quam vina in cavum ſiphunculum e dolio majori effluunt.

3. Piſtillum modo memoratum C ſimile eſt huic Fig. 7. inſtructum quoque cochlea a parte B; quâ etiam ſuperne firmari hæc machina poteſt: pars hujus interior obſtructa eſt fruſtulo ligni mollioris, quod ſive e tendine & filamento chalybeo pendet, ſive infixum eſt, ita tamen ut laxe inſideat; ſcilicet ut juxta illud aëri ſit locus exeundi influente vino, vel introeundi in effluentis ſpatium. Super hoc transverſim locatum vides alium tubulum (D) ejusdem cum priori longitudinis.

4. Superior pars etiam infigi dolio poteſt mediante cochlea Fig. 8. & clave Fig. 11. Scilicet cochlea E injecta in canalem (D) Fig. 7. eique ſimul applicata claviculâ, cujus

til andra endan/ kan then wrida skrufwen in/ så at hela then öfra machinen hålles thermed i stånd/ at intet kunna wridas på någon sneda.

5. Retta nyckelen ligger wid Fig. 6. Theß breda ende är klufwen och delt i så monga delar som alrahögst kan åstundas halsstop. Vti klyftet är en liten löpare (m)/ som kan skrufwas fram och tilbakars medelst nyckelen. Andra enden är rund ihohlig/ som ses. Jnvti bemelte nyckel ligger machinen Z L Fig. 10. Theß andra ende är spiral eller wriden sneckewis/ som är lika long med then klufna endan på större nyckelen/ hafwande sin löpare L på sig; hwilken kan gå fram och tilbakars/ när then skrufwas om med sin behöriga nyckel Fig. 11. När nu alt sitter tilsammans/ settes nyckeln Fig. 11. in wid endan H (Fig. 6.)/ och skrufwas Fig. 10 omkring/ tå löparen L flyttar sig fram och tilbakars til then delning som åstundas/ så monga hwarf/ så monga delningar och så monga halsstop.

6. När man tager fodret F Fig. 5. af tappen/ är then invti som then ses wara Fig. 3. nemligen twenne hiul lika stora A och B/ och med lika monga taggar försedde; doch hafwa begge af them en större tagg eller tand på sig som wid c och a. E är sielfwa tapphohlet/ som winet kommer at rinna vt igenom. D är stengaren eller dören therföre. H I K är några fiädrar omkring. (G) är snellaren som hindrar at nyckeln wrides tilbakars. Fiädrarna äro särskilt affatta Fig. 4. på thet the intet måge hindra at rett fatta hiulen och theras sammansettning. Så och för sig sielfwa/ thet öfra hiulet Fig. 13. thet midlersta eller vndra Fig. 14. som henger ihop med en canal P p/ hwilken och har ett litet hohl wid p/ hwilket när thet kommer at swara just emot then andra canalens hohl (d) Fig. 9. kommer winet vr tunnan i tappen;

och

opè cochleam bene in cadum intrudes: Unde ſiphunculus undiquaque manebit immotus.

5. Ipſiſſimam clavim oſtendit Fig. 6. Cujus latior pars in medio ſciſſa eſt, diviſaque in tot lineas, quot deſideras maxime ¼ partes canthari Svec. inque ipſâ ſciſſurâ Curſor (m) quidam apparet, qui ope interioris cochleæ & claviculæ huc & illuc ad quamcunque libet diviſionem transferri poteſt: pars altera eſt cavo rotunda ut vides. In clavi hâc majore jacet cochlearis linea Z L Fig. 10. per cujus dimidium ſpiræ ſunt ductæ; quæ pars ejusdem cum parte ſciſſa clavis majoris longitudinis eſt. Operatio eſt hujuscemodi; Curſor ille L antrorſum & retrorſum agi poteſt ope cochleæ & claviculæ Fig. 11. applicatâ nempe claviculâ Fig. 11. extremitati H Fig. 6, promovetur Curſor L verſus anteriora ad diviſionem quamcunque deſideras: quotque gyros clavicula conficit, tot diviſiones & totidem ¼ partes canthari Svec: adimplebit.

6. Demto operculo F (Fig. 5.) de ſiphunculo, pateſcit ſtructura ejus interior, qualis apparet Fig. 3. Conſtat ſcilicet binis rotulis æqualis magnitudinis A & B. Quarum quæqne uno longiori dente gaudet c & a. E eſt ipſiſſimum foramen ſiphunculi per quod vinum defluet in vas ſubjectum. D eſt operimentum ſive obex ejusdem foraminis. H I K ſunt tendines aliqui. G eſt dens quidam acuminatus, qui ne clavicula retro agi poſſit, impedit. Tendines ſingillatim expo untur Fig. 4. ſcilicet ut melius omnia comprehendi poſſint, neve rotulæ tendinumque combinatio quandam confuſionem pariat. Singillatim, inquam, expoſita ſunt, rotula ſuperior Fig 13 Altera in medio locata Fig 14. Cui fiſtula P p adjuncta eſt, in quâ parva eſt apertura p, quæ cum aperturâ fiſtulæ majoris (d) juncta (Fig. 9) viam dat vino e dolio in ſiphunculi cavitatem erumpendi; queis

och når thet sedan tilstenges och öpnas hohlet wid E Fig. 3. flyter thet samma ut tappen i kerlet ther man thet åstundar. Stengaren är Fig. 12 som medelst the lengre tendren c och a på hiulen Fig. 3, lyftes op och skiutes ned en gång hwart hwarf. Fiäderarna Fig. 4. äro för at thet öpnar sig när stengaren kommer op och sedan sluter sig at hålla stengaren qwar tils han skufwas ned igen. En fiäder är ock för snellaren at hålla'n til snellarhiulet.

7. När nu sammansettningen är bekant / och man noga skärskodat theß delar / lärer thet öfriga falla af sig sielft at förstå; doch at gifwa en handreckning i thet som torde fehla / är hela operationen sålunda. 1. När nu tappen är fastskrufwad på twenne stellen wid tunnan / at then sitter orörlig fast / behålles nyckelen L Fig. 6. i förwahr. 2. Åstundar man tå ett wist mått win / kan nyckelen efter önskan och åstundan stellas således. Man sticker nyckelen Fig. 11. inuti större nyckelen Fig. 6. så at then omfattar then inre Fig. 10. och wrider then så omkring / tå man ser lilla Löparen L röra sig fram uti longa skuran: nu som hwar lika delning betyder fierdedels kanna / och hwar stor en hel; wrides then til exempel nu fram 6 hwarf / at löparen med sin skura stannar wid then 6:te delningen / som mercker 1 ½ kanna efter åstundan; tå tages mindre nyckelen Fig. 11. ut / och thet öfriga gifwes kellardrengen at tappa efter så mycket honom lyster. 3. Med then stelta nyckelen går han ned och setter then inuti (G) Fig. 1. och wrider så först halft hwarf omkring / tils then lilla nubben (i) fastnar i en skura / tå straxt winet rin-

ner

queis dein ſeparatis levatoq; ſurſum obice prodit foramen majus E Fig. 3. per quod effluit vinum in vas ſuppoſitum. Fig. 12 eſt prædictus obex, qui ope dentium c & a longius e rotulis prominentium jam levatur jam demittitur, aperitque & operit foramen E; quod fit ſemel in quavis circumvolutione. Tendinum Fig. 4. uſus eſt, ut ſurſum levatus obex teneatur in loco ſuo ſuſpenſus, ſimulque ut dens ille acuminatus, qui recurſum rotæ & claviculæ inhibebit, impellatur ad rotam ſuam, ne retro machina, cum dispendio totius artis torqueri poſſit.

7. Cum tota compoſitio nota ſit, & partes ejus ſingulas bene luſtraverimus, quod ſupereſt ex ſe arbitror manifeſtum fiet. Sed ne aliquid adhuc obvium erit, in quo hæreat aqua, en totam operationem breviter. 1. Cum ſiphunculus ope binæ cochleæ vaſi vinario bene ſit inſertus; & clavicula L ſit penes dominam in cuſtodiis. 2. Tum quantum vini deſideret domina, a clavi ſuâ beneficio artis impetrabit, ſi modo norit illam ad arbitrium ſuum disponere: quod fit ita, inſerat modo claviculam Fig. 11. in clavi majusculâ Fig. 6. eo modo ut amplexetur prior unam hujus poſterioris extremitatem ſcil. Fig. 10. Clavi dein more conſveto circumacta, curſor L promovetur antrorſum in ſemita ſuâ ſive in ſciſſura: Jam quia diviſio quævis minor $\frac{1}{4}$ partem canthari, & quævis major cantharum integrum denotat, ſi tunc, verbi gratiâ, clavis ſit promota verſus ſextam lineam, ſive curſor L ad ſextam diviſionem ſubſtiterit, quæ 1 $\frac{1}{2}$ cantharum denotat, inde eximi & ſervari clavicula Fig. 11. poteſt, reliqvumque ejus tradi arbitrio famulæ; cui permiſſum ſit e cado, quantum ei libeat liceatque, promere. 3. Cum clavi ita diſpoſita cellam intret famulus, inſeratq; illam loco debito G Fig. 1. Peragat primum dimidiam circumvolutionem, ſive usque dum denticulum in inciſione re-

ner invti tappen til ett halft stop: när thet synes fråsa eller fraggas litet igenom swickhohlet / är teckn at tappen är full / tå han wrider ännu ett halft hwarf / tils nubben stöter emot skuran / tå thet samma rinner vr tappen in vti kerlet: när ännu halfwa hwarf giöres / tils winet rinner så ofta in och vr tappen som nyckelen thet kan tillåta / tå mera ingen wridning kan ske eller någon tår vttappas. 4. Orsaken finnes lett / at then lilla Löparen L Fig. 10 går then samma wägen tilbakars / han är wriden til med nyckelen; och som hwart hwarf giör fierdedels kanna / som sagt är / moste han så monga hwarf och delningar gå tilbakars / så monga fierdedels kannor han är satter på / tils han kommer in mot O Fig. 1. tå han widare intet kan komma eller nyckelen wridas.

8. Widare 1. När nyckelen är stelter efter behag til then delning som åstundas / och stellaren eller mindre nyckeln behålles i förwahr. 2. Och kellar-drengen setter in samma nyckel i tappen / kommer then inre skrufwen / som förr kunde lempas til nyckelen / nu at fogas til (m) Fig. 10 som är lika som nyckelens vicarius. 3. När nu (m) omfattas af then samma / sker / at samma skruf med sin löpare moste gå samma wäg tilbakars som han förr gåt fram / hwarom redan sagt är. 4. Nu som en hop klufwor äro i nyckelen nedan til och the komma jemnt invti hiulet A, omföres bemelte hiul och thet andra thermed / tillika med nyckelen. 5. Wid första hwarfwet Fig. 3 kommer then större tanden (a) ofwanifrån til K och skuter så ned stenaaren FD öfwer hohlet E, tå tappen fylles invti just til sin capacitet ett halfstop; när nu nyckelen ännu halft hwarf

wrides

tardari contingat, quod indicium eſt, vinum e cado majori in ſiphunculi cavitatem influere velle implereque illam $\frac{1}{4}$ parte canthari; moxque ut apparet deſuper ſpumeſcere, rurſus indicium eſt repletum eſſe ſiphonem, tempusque adeſſe peragendi alteram volutionis partem, usque dum denticulus ſeu inciſio iterum impedierit progreſſum, cum animadvertes vinum e ſiphunculo modo repleto in vas ſubjectum effluxurum eſſe. Si adhuc dimidios gyros ordine peregeris, influet effluetque vinum ſiphoni, usque dum clavis hoc permiſerit; ſed quando ulterius circumvolvi nequit, ſignum eſt, nil vini amplius effluere poſſe e cado. 4. Cauſa in patulo eſt, ſcilicet parvulus ille curſor L Fig. 10. quavis volutione ſemel retro agitur, totque gyros & lineas remetiri poteſt, quot prius ope claviculæ Fig. 11. antrorſum actus eſt & quoniam quilibet gyrus ſignificat $\frac{1}{4}$ partem canthari, neceſſe eſt clavem per tot diviſiones retro agendam eſſe, per quot modo ope claviculæ ſit promota, usque dum pervenerit ad O Fig. 1. quando circumagi amplius nec vi nec arte poterit.

8. Clavi 1. ad arbitrium juxta diviſionem deſideratam dispoſitâ & claviculâ Fig. 11. in cuſtodiis penes dominam ſervatâ, traditâque ſuppromo alterâ parte ſiphunculi, manifeſtum eſt 2. interiorem cochleæ extremitatem amplexuram eſſe clavim ad (m) Fig. 10, vicemque retentæ claviculæ geſturam eſſe. 3. Amplexatâ (m) remeat per eandem viam curſor, easdem lineas & diviſiones remetiens, quas prius permenſus fuerat. 4. Quoniam inciſiones ſunt in claviculâ ſimulque in rotula A factæ, cohærebunt ita ut ſimul circumvolvantur, inferiorq; rota cum ſuperiori. 5. Facta demivolutione vide Fig. 3. impellit dens majusculus (a) in obicem FD deſuper ad K, truditque illum deorſum ita ut claudat foramen (E), quo facto bina illa foramina intus conjuncta transitum dant vino in ſiphunculum irrumpendi, usque dum ad capacitatem ſuam re-

wrides om / kommer tanden (c) til f, och skuter så stengaren DF wid f op / at hohlet wid E öpnas / tå samma win rinner therwt; och når ännu ett halft hwarf giöres / fylles tappen full / som rinner wt wid andra halfwa hwarfwet / tils nyckelen thet tillåter.

9. At se processen af thet innersta. 1. Thet millersta hiulet wises Fig. 14. med en öpen canal på / hwilken komer at sittia inwti thet röret / som går mitt igenom tappen hel tett åt / hwilket wises Fig 9. 2. Wid then andra wridningen komma just tw små hohlen p och d tilhopa / tå winet kan flyta therigenom inwti tappen; tå sedan wid andra wridningen the begge hohlen komma ifrån hwarandra / at intet inlopp wr tunnan gifs mera / tils thet är wtlupit / och så widare.

10. Om man skulle åstunda weta hwad fiädrarna giöra til saken / kan ses af Fig. 4. Fiädren H håller snellaren G fast wid hiulet / at then hindrar bakwridning. J giör at K öpnar och lycker sig til och håller stengaren fast / at then intet faller neder af sig sielft / efter han står i jemnwigt. L är en liten balck eller rygg för stengaren / som then kommer at löpa bredewid.

11. **Tappens nogare beskrifning.**

	Geom. Tum.
Tappens lengd A Fig. 1.	3, 1
" " " Diameter F Fig. 1.	3, 3
Röretz Diameter inwti Fig. 9	55
Swickans högd C Fig. 1.	3, 4
Twerröret öfwer swickan EDZ	3, 4
Hela nyckelens lengd Fig. 6.	3, 6
Klyftet eller skrufwen inwti L Fig. 6.	1, 7

pletus fuerit: clavi adhuc dimidium faciente gyrum, dens rotulæ alter (c) ſubvectus ad f ſublevat repagulu DF: demptoque obice foramini E, vinum effluit in vaſa ſubjecta: iteratâ adhuc dimidia volutione impletur rurſus ſiphunculus & rurſus evacuatur, totiesque influitur effluiturque, quoties circumagitur clavis; totiesque circumagi poteſt dum retro ſit acta per easdem diviſiones in quas a domina nuper dispoſita fuerat.

9. *Proceſſus interior.* Rotula quæ in medio eſt repræſentatur Fig. 14 cum adjuncto canali, qui inſerendus eſt fiſtulæ longiori transeunti ipſum ſiphonem, quem oſtendit Fig. 9. 2. Secunda vice, verſa clavi, coeunt bina foramina p & d in unum, viamque per ſe præbent vino e cado in ſiphonem elabendi: factâ adhuc volutione, par illud foraminum ſeparatur, clauditurq; ſimul meatus c dolio in ſiphunculum, ſed facta aliunde aperturâ ſublevato obice, effluit inde vinum: & ſic porro.

10. Si quis uſum tendinum noſſe deſideret, hauriri ille imprimis poteſt a Fig. 4. ubi vides elaterem H inſervire denti ſtatori G; ſcil. ut ejus ope dens teneatur firmus ad rotulam, & recurſus clavis rotarumque impediatur. Auxilio enim tendinis J aſcendente obice, apertura quædam fit ad K, moxque clauditur & firmatur obex in ſitu ſuo, ne ſponte, quia perpendicularis pendet, delabatur. L eſt paries juxta quem commode aſcendit deſcenditque obex.

Accuratior Siphunculi deſcriptio.	*Digg. Geom.*
Longitudo cavitatis vel totius Siphonis A Fig. 1.	3, 1
- - Diameter F Fig. 1.	3, 3
Diameter fiſtulæ interioris Fig. 9.	55
Altitudo Epiſtomii C Fig. 1	3, 4
Canalis transverſus EDZ	3, 4
Longitudo integra clavis Fig. 6.	3, 6
Sciſſura ſive cochlea interior L, Fig. 6.	1, 7

Nyckelens vicarius Z Fig. 10 75
Hiulens diametrar Fig. 13. och Fig. 14 85
Lilla rörets lengd wid hiulet p P Fig. 14. 9

12. I anledning af thet förra har man ock afsatt en ny invention på en swicka / som ock tiänar i samma kram; then är giord sådan som wises Fig. 15. Är ett meßings rör med ett lock (b) ofwanpå / och med 4 eller 5 hohl strax innder: En fiäder giord af ståltrå henger innder med en korck (c) eller en stopp af annat trä på: thenna settes i sielle för then wanliga swickan i samma rum / och har man intet af nöden at öpna then när thet behöfwes / som hon öpnar och tilsluter sig sielf; i thy när wädret faller undan / i thet winet rinner af / så öpnar thet sig lika som sielft / medelst then yttra wädertryckningen; och när ingen wädertryckning är / drager fiädren op korcken och sluter thet til / at ingen luft kan skada winet.

13. Som then beskrifna tappen kan billigt säias wara ett läs för tunnor / och stengsel för några otidigas begiär och underslef; ty är ock sådant i ordinaire låser anstelt / hwaraf 12 åtskilliga slag äro wid Stiernsund förferdigade; bland hwilka är ock et som har en nyckel / hwarpå man kan se om dören är tilstengd eller intet / så at matmodren behöfwer intet widare beswär at se efter sitt tienstfolcks richtighet / än af blotta nyckelen.

14. Som sielfwa konsten i tappen beskrifwer sig nu mera sielft

Vicarius claviculæ Z, Fig. 10. 75
Diametri rotularum Fig. 13 & Fig. 14. 85
Longitudo tubuli affixi rotæ pP Fig. 13. 9

12. Ex occaſione prædictorum novam quandam Epiſtomii fabricam tradere lubet, quæ in cadis vinariis etiam uſurpari poteſt; opportunam itaq; judicavimus ejus mentionem, quia inſtituto noſtro inſervit. Formam ejus vides Fig. 15; eſt nimirum canalis ab orichalco confectus, inſtructus capitulo (b) gaudetque 4 vel 5 foraminulis; intus latet elater quidam e filo chalybeo conſtans, e quo fruſtulum ligni, quod obturamen erit, pendet, apprime orificio ſuo conveniens. Subſtitui hoc poteſt uſitatis Epiſtomiis: ſtructuræ ejus commoditas in eo conſiſtit, quod ſuppromi non opus habeant auferendi cadis epiſtomia, quoties vinum expromendum ſit; nam ſponte ſuâ ſe non aperit modo ſed & claudit, prout uſus poſtulat. Defluente enim vino, rarefit aër interior, unde neceſſum eſt aerem externum in locum ejus irrupturum eſſe: premente ergo vi quadam atmoſphærâ, ſe remittit tendo, & ſic depreſſo obturamine admittitur impellens aër: quo facto dein ſe ſponte elater vi elaſtica claudit, impeditque quo minus vinum ingruente aëre evaporando noxam capiat.

13. Prout ſiphunculus jamdum deſcriptus & delineatus dici mereatur ſera vel obturamentum famulantium quorundam technis & libidini injectum; unde etiam idem hoc inſtitutum eſt in ſeris vulgaribus, quarum duodecim ſpecies Stiernſvndii confectas animadvertes; e queis una mentionem præ ceteris meretur, pollens ſcilicet cõmodâ hâc virtute, ut e clavicula videre liceat, num janua ſit clauſa nec ne, ita ut ſatis dominæ ſit curæ & ſecuritatis, ſi claviculam modo intueatur, inque latebris togæ ſuæ illam bene cuſtodire noverit.

14. Quia ars ipſamet ſiphunculi e delineatione æque

as

sielft af ritningen/ enär han har en liten hielp och vtredning af föregående beskrifning/ synes onödigt thes delar arithmetice och geometrice widare at vtwisa: wil allenast i anledning theraf något röra om sådana kerls innehåll/ som cylindrars, cubers och sphærers &c.

En tafla på *Cubers*, *Cylindrers* och *Sphærers* innehåll/ när man tager sidorna i wißa tum.

Canthari Svecici

1. *Arithmetisk* vträkning; theña första taflan vtwisar alla innehåll/ när man har satt breddren och högdren i jemnt tahl/ som 1/ 2/ 3/ 20/ 30 tum/ så i cuber, cylindrer, som sphærer: nemligen en cub af 5 tums sido inehåller $1\frac{3}{4}$ kaña: en cylindre, hwars högd. och diameter är 5 tum jemnt/ har rum för $\frac{55}{100}$ dels kanna; en sphære af samma lengds diameter är $\frac{655}{1000}$ dels kanna i rymden inwti; och så widare med the öfriga.

tum.	*Cuber*	*Cylindrer*	*Sphærer*	tum.
1	$\frac{1}{100}$	$\frac{11}{140}$	$\frac{11}{2100}$	1
2	$\frac{2}{25}$	$\frac{11}{175}$	$\frac{42}{1000}$	2
3	$\frac{27}{100}$	$\frac{297}{1400}$	$\frac{141}{1000}$	3
4	$\frac{16}{25}$	$\frac{1}{2}$	$\frac{335}{1000}$	4
5	$1\frac{1}{4}$	$\frac{55}{56}$	$\frac{655}{1000}$	5
6	$2\frac{4}{25}$	$1\frac{122}{175}$	$1\frac{131}{1000}$	6
7	$3\frac{43}{100}$	$2\frac{273}{1400}$	$1\frac{797}{1000}$	7
8	$5\frac{2}{25}$	$4\frac{8}{35}$	$2\frac{682}{1000}$	8
9	$7\frac{22}{100}$	$5\frac{1012}{1400}$	$3\frac{812}{1000}$	9
10	10	$7\frac{6}{7}$	$5\frac{238}{1000}$	10
11	$13\frac{31}{100}$	$10\frac{16}{35}$	$6\frac{27}{100}$	11
12	$17\frac{7}{25}$	$13\frac{101}{175}$	$9\frac{51}{100}$	12
13	$21\frac{97}{100}$	$17\frac{367}{1400}$	$11\frac{508}{1000}$	13
14	$27\frac{11}{100}$	$21\frac{427}{1400}$	$14\frac{2}{10}$	14
15	$33\frac{3}{4}$	$26\frac{225}{1400}$	$17\frac{68}{100}$	15
16	$40\frac{24}{25}$	$32\frac{250}{1400}$	$21\frac{455}{1000}$	16

tum.

2. Taflans vträkning är lett/ när man wet en fots cub eller 1000 tums innehåll wara 10 kannor jemnt: sedan at en cub

ac deſcriptione dignoſci poteſt, non neceſſum eſſe putem partes ejus ſingulas arithmetice & geometrice ope calculi exponere. Ex occaſione præcedentium lubet tantum de ſpatiis cylindrorum, cuborum, globorumque &c. aliquid tradere.

Canthari Svecici.

tum.	Cuber	Cylindrew	Spharer	tum.
17	$48\frac{12}{100}$	$37\frac{1143}{1400}$	$25\frac{2}{100}$	17
18	$58\frac{32}{100}$	$45\frac{11}{100}$	$30\frac{55}{100}$	18
19	$68\frac{59}{100}$	$53\frac{89}{100}$	$35\frac{92}{100}$	19
20	80	$62\frac{86}{100}$	$41\frac{9}{100}$	20
21	$92\frac{61}{100}$	$72\frac{76}{100}$	$48\frac{5}{10}$	21
22	$106\frac{48}{100}$	$83\frac{59}{100}$	$55\frac{77}{100}$	22
23	$121\frac{67}{100}$	$95\frac{50}{100}$	$63\frac{73}{100}$	23
24	$138\frac{24}{100}$	$108\frac{61}{100}$	$72\frac{41}{100}$	24
25	$156\frac{25}{100}$	$122\frac{67}{100}$	$81\frac{69}{100}$	25
26	$175\frac{76}{100}$	$138\frac{9}{100}$	$92\frac{7}{100}$	26
27	$196\frac{83}{100}$	$154\frac{65}{100}$	$103\frac{1}{10}$	27
28	$229\frac{52}{100}$	$180\frac{33}{100}$	$120\frac{21}{100}$	28
29	$243\frac{89}{100}$	$191\frac{63}{100}$	$127\frac{27}{100}$	29
30	270	$212\frac{14}{100}$	$141\frac{45}{100}$	30
40	640	$502\frac{86}{100}$	$335\frac{24}{100}$	40
50	1250	$982\frac{14}{100}$	$654\frac{76}{100}$	50

1. *Deſcriptio arithmetica*, prior hæc tabella oſtendit omnia illa ſpatia & contenta, quorum altitudines & longitudines in numeris ſive digitis integris ſupponuntur, ut in 1, 2, 3, 0, 30. digg tam in cubis, cylindris quam ſphæris, ex gr. Cubus cujus latus cubicum eſt 5. digg. ſpatium implet $\frac{5}{8}$ partem canthari. Globus ejusdem diametri adimplebit $\frac{655}{1000}$ partem canthari, & ſic de reliquis.

2. Conſtructio tabulæ eſt facillima, ſi modo notum ſit unius pedis vel 1000 digitorum cubum æquare 10 Cantharos

cub til en inneſluten cylindre är ſom 14 til 11. til en inneſluten boll ſom 21 til 11. ſå kan ſedan lett finnas 1/2/ 3/ 4/ 10/ 20/ 30 tums innehåll / och ſedan the innehållen medelſt the bemelte genlikheter reducera til Cylindrars och Sphærers innehåll / ſom äro af lika ſtor diameter, höjd och ſida.

3. Nu ſom taflan intet widare ſtrecker ſig än til the cylindrar ſom äro lika breda ſom longa; ſom ock til cuber och ſphærer och intet til oblonger och ovaler, ſom doch de meſta innehållen / ſom kanna och tunna / äro högre än bredden; ſå är doch lett at finna af ſamma tafla hwad höjd fodras til ett wiſt mått / når man tager baſin för wiß: jag tager 4 tum för en kannas diameter, wil ſå wetta höjden: af taflan ſer man 4 tums cylindre ther diametern är lika med höjden / ſwara emot $\frac{1}{2}$ kanna; ſå ſäjes $\frac{1}{2}$: 4:: 1. 8. ſå är 8 tum höjden. Eller en tunna hwars baſin jag ſetter 15 tum eller 3 qwarter i diameter: af taflan finnes 15 tums cylindre ſwara emot $26\frac{225}{1400}$ / ſå ſäjes: $26\frac{225}{1400}$: 15:: 56:: 31/5. ſå är höjden af en tunna 31/5/ når diametern är 26/66. tum. Och ſå ſom man opererar i cylindrar, bör ock ſke i cuber til oblonger; och i ſphærer til ovaler, når man will hafwa ett jemnt och wiſt mått.

4. At i korthet ſe the ſamma kroppars ſtereometriſka uträkning och genlikhet: ſå är 1. En cub eller ett oblongum til en inneſluten cylindre ſom 14 til 11. 2. En cylindre til en inneſluten cub ſom 11 til 7. 3. En cub til en inneſluten ſphære eller ett oblongum til en oval ſom 21 til 11. 4. En ſphære til en inneſluten cub ſom 62 til 41. 5. En ſphære til en cylindre ſom har ſamma baſin och höjd med ſphærens dia-

tharos Svec. & insuper rationem cubi & inclusi cylindri esse ut 14 ad 11. atque cubi & inclusi ei globi ut 21 ad 11 poterit dein facili negotio 1, 2, 3, 4, 5, 10, 20, 30, digg. spatium reperiri, & ope prædictarum rationum eadem hæc spatia reduci ad spatium Cylindri, sive globi cubo incluſi, gaudentisque eadem diametro, altitudine vel latere.

3. Quoniam tabella non ultra se extendit quam ad Cylindros qui ejusdem sunt altitudinis & longitudinis, adque cubos & globos. sed non ad spatia oblongiora vel oviformia; licet frequentius reperiamus mensuras vulgares ut tonnas, cados, cantharos, modios &c. altiores esse diametro baseos suæ; usque tamen facile ex tabella nostrâ reperiemus altitudinem cujusque mensuræ, cujus *basin* notam supponimus: ex. gr. suppono diametrum Canthari esse 4 digg. jam quæritur ejus altitudo. Consulatur tabella, e qua videbimus Cylindrum 4 digg. (qui æqualis sit altitudinis & diametri) dimidio Canthari spatio æquivalere; ideoque inferre licet $\frac{1}{2}$: 4:: 1: 8. Unde datur desiderata altitudo canthari 8, cum latitudo sit = 4. Vel *tonna* cujus basin suppono 15 digg. e tabellâ colligitur 15 digg. Cylindrum exactissime æquare $16\frac{225}{400}$ Cantharos; inferatur ergo $16\frac{225}{400}$: 15:: 56:: 31, 5. Unde datur altitudo 31, 5. digg. Cujus diameter baseos sit 26, 66. Prout in Cylindricis calculum instituimus, ita etiam in sphæricis instituendus est, si oblongiora vel formæ ovalis spatia desiderentur.

4. Ut breviter analogiæ nostræ Stereometricæ exponantur, est 1. cubus sive oblongum ad inscriptum Cylindrum ut 14 ad 11. 2. Cylinder vero ad cubum inscriptum ut 11 ad 7. 3. Cubus ad globum vel oblongum cubicum ad incluſum in se ovalem, ut 21 ad 11. 4. Globus ad cubum inscriptum ut 62 ad 41. 5. Globus ad Cylindrum ejusdem diametri & altitudinis ut 2 ad 3. 6. Globus ad ovalem in-

meter som 2 til 3. 6. En sphære til en innskreneckt oval, som ovalens begge diametrers quadrata.

Digiti Geometrici Ped. Svec.

kan.	*Cubens* sid.	*Cylindres*	*Sphærens dia-meter*	kan.
1/8	2, 321	2, 520	2, 88	1/8
1/4	2, 924	3, 174	3, 635	1/4
1/2	3, 684	3, 999	4, 58	1/2
3/4	4, 217	4, 58	5, 152	3/4
1	4, 657	5, 055	5, 79	1
2	5, 858	6, 36	7. 29	2
4	7, 368	7, 99	9, 16	4
7	8, 879	9, 63	11, 04	7
8	9, 283	10, 5	11, 54	8
10	10,	10, 85	12, 43	10
14	11, 17	12, 12	13, 88	14
16	11, 70	12, 70	14, 55	16
20	12, 60	13, 68	15, 67	20

5. I thenna andra taflan har man tagit jemna mått/ som kanna/ tunna/ och afmått sidorna som wederbóra ther efter vti cuber, cylindrar och sphærer; wid cylindren tager man hóiden lika med bredden. Hwilken tafla ár lett at gióra når man wet 10 kannors innehåll wara 10 tums sida i en cub; samt sidan i en cub til en cylinders lengd eller hóid af samma innehåll wara som radices cubicæ 11 til 14. thet ár som 1112 til 1205. Och til en sphæres diameter som radices cubicæ 14 til 21/ thet ár som 2410 til 2759. Drager man vt radices cubicas af the tum som fodros för berörde mått/ så har man straxt sidan til en cub; och reducerar man samma sida genom bemelte rationer, så har man lengden för en jemntiock cylindre, som ock för diametrar til sphærer.

6. Men skulle intet cylindren wara lika long som hóg/ vtan allenast thes basis eller diametern lika med cubens sida; så ár cubens sida med cylindrens hóid som radices quadratæ ■ til 14. eller som 819 til 935. eller til ovalens hóid/ når lengden

inſcriptum eſt in ratione duplicata diametrorum, ſive ut quadrata utriusque diametri ovalis.

Digiti Geometrici Ped. Svec.

Cantheri	Cubilatera	Cilyndri	Sphæræ diametri	Cantheri
24	13, 39	14, 53	16, 65	24
28	14, 09	15, 29	17, 51	28
30	14, 43	15, 66	17, 94	30
32	14, 73	15, 99	18, 31	32
40	15, 87	17, 22	19, 73	40
42	16, 13	17, 51	20, 5	42
50	17, 09	18, 55	21, 25	50
56	17, 76	19, 28	22, 98	56
60	18, 17	20, 17	22, 6	60
64	18, 57	21, 16	23, 09	64

In tabellâ hâc altera ſumſiſſe placuit menſuras certas ulitatasque, ut Cantharos, tonnas, modios &c. & latera ſive diametros menſuravimus, quanta in globis, in cylindris & in cubis eſſent. Cujus tabellæ conſtructio etiam eſt facilis, modo notum ſit 10 Cantharos implere unius pedis Svec. vel 1000 digitorum Geom. ſpatium, vel æquare latus cubi 10. Dein latus cubi ad latus cylindri, qui æque latus quam altus ſit, eſſe in ratione radicum cubicarum 11 ad 14, ſive ut 1112 ad 1205: & eſſe ad diametrum globi in ratione radicum cubicarum 14 ad 21; ſive ut 2410 ad 2759. Extractis radicibus cubicis de ſpatiis menſuræ propoſitæ, datur latus cubicum quæſitum, quod ſi reducatur ope prædictæ analogiæ, habetur dimenſio cylindri qui ſit ejusdem tam latitudinis quam altitudinis, & inſuper diameter globi; quæ omnia ejusdem cum cubo capacitatis ſint.

6. Si vero cylindri altitudo ſupponatur major baſeos ejus latitudine, & latitudo æqualis lateri cubi cujusdam, ſpatiis nihilominus æqualibus, tunc loco rationis ſub-triplicatæ vel cubicæ modo uſitatæ adhibebitur ratio ſub-duplicata

lengden tages lika med cubens sida / som radices quadratæ 11 til 21 / thet är / som 83 til 117: tå innehållen blifwa lika.

7. Exempel / jag begiär en kannas rymd uti en oval, höjden eller lengre diametern sætter jag wara $6\frac{1}{4}$ tum / frågas then andra diametern : man finner af förra taflan / at om höjden i ett oblongo wore $6\frac{1}{4}$ tum / så bör bredden wara 4 tum just för en kannas rymd : ty säjes 83 : 117 :: 4 : 5/639 : thet är / om större diametern wore $6\frac{1}{4}$ tum / borde then mindre wara 5/639 at hålla just en kanna i sin oval. eller om man giorde prof på thet samma til en tunna / och man wil öfweralt hafwa en osiympad oval tunna / och then sætter wara 31/5 tum i lengden: wore nu samma lengd i ett oblongo, så fant man af förra taflan bredden wara 15 tum til en tunnas rymd; betienar man sig af förbemelte ration, så är 83 : 117 :: 15 : 21/14; så finner man samma innehåll i en oval, neml. om större diamet. wore 31/5 / och mindre 21/14 / så skulle ovalen hålla uti sig just en tunna.

8. Nyttan af föregående tafla lärer wel finnas af thet nu redan omtalt är / hwilken strecker sig widare när man wet werckställningen at föra then genom en simple reduction til hwad höjd / lengd / innehåll man åstundar.

Ellieſt om alla mått wore giorda til then storlek / som the i taflan äro utsatte til / hade the then förmohn / at när säd och annat tort theruti mätes / at alla rågor woro i proportion til sin myckenhet / hwilket ellieſt temmeligen skiljes / i thet ofta en skeppa borde hafwa samma råga med en tunna / och således gifwa 4 dubbel råga affig / när samma tunna igenom skeppor inmätes. Uti wijn och annat wått har thet ock en förmohn / när höjden lika

med

plicata ſive ut quadratorum 11. ad 14 radices; hoc eſt, ut ipſæ radices 819 ad 935. Et pro formarum ovaiium ſpatiis ut radices quadratæ 21 ad 11 ſive ut 83 ad 117. Quarum ope ſub inæqualitate laterum æqualitas contentorum dabitur.

7. Ex. gratiâ, inquiro ovalem, cujus contentum exacte reſpondeat ſpatio vulgaris canthari; altitudo ejus vel diameter pro lubitu ſumatur 6 ¼ digg. quæratur jam diameter altera ei correſpondens: e tabella conſtabit, ſuppoſita altitudine oblongiori 6¼ digg. requiri latitudinem 4 digg. ut exacte cantharus impleatur: ideoque inferri poteſt; 83: 117:: 4:: 5, 639. hoc eſt, poſitâ diametro majore 6¼ digg. eſſet minor 5, 639, ut ſit capacitas unius canthari in ſpatio oviformi. Vel ſi experiretur hoc idem in dolio, quod ſupponimus undiquaque oviformis eſſe figuræ, cujus longitudinem ponimus 31, 5 digg. geom. ſi hoc quærendum foret in oblongo, cujus longius latus eſſet 31, 5; expiſcari e tabella priori potes oblongum quoddam 15 × 31, 5 laterum implere exacte ſpatium 56 cantharorum vel unius tonnæ. jam ex regulâ prædictâ una cum tabellâ inferri analogice poteſt 83: 117:: 15: 21, 14. Unde reperietur ſpatium ovalis exacte tonnam vulgarem conſtituentis, conſtare debere diametris, 31, 5 digg. majori, & 21, 14 minori.

8. Uſus tabellæ præcedentis e modo jam allatis colligitur, qui tamen ulterius ſe extendit, cognitâ modo methodo reducendi illa ope rationis ſimplicis ad altitudinem, longitudinem, & ſpatia quæcunque deſideras. Interim ſi omnes menſuræ ejusdem cum illis in tabella dimenſionis eſſent, ſcilicet ut altitudo & baſis cylindri æquales eſſent; hoc inde emolumenti ſperari poſſet, primum in *aridis*, ut ſi frumentum, hordeum, ſal &c. menſurandum eſſet, cumuli illi ſupereminentes ſive redundantiæ tonnis ſuperinjici ſolitæ, eſſent in qualibet menſura proportionales quantitati menſurati; quod alias quam maxi-

me

med bredden/ at tå minsta superficies är som kan gies; hwaraf sker at thet bettre kan hållas och minst är vnderkastad wädrets introng hwad mera; ty ju mindre superficies til sin rymd ett winkerl är af/ ju mindre har thet at befara däfnad/ evaporation &c. och ju större kerl och mindre skilnad emellan kerlets höjd och lengd/ ju mindre är ock theß superficies eller omkast til sin rymd.

I stereometrien förefaller wel sellan ovala kerls afmätning/ fast tunnor synes en likhet hafwa med afstumpade ovaler, then man brukar genom Cylindrar at afmäta; fast om the reducerades til ovalform torde afmätningen blifwa i alla deelar nogare. Ellest wet man at tunnor/ brader/ fiädrar och alt sådant som med macht bendes/ böjer sig mera efter hyperbolam än efter ellipsin; och twert om alt som faller fritt i luften til en boga vtan twång/ som tog/ segel/ watn/ giör en parabolam; torde doch kanskie gies med tiden ett bettre sett at finna the böjda kerls stereometrie är then som brukelig är.

Mechanice at finna the förra kroppars innehåll/ kan man best betiena sig af the redan thertil giorda instrumenter, som af scalis och lineis Carolinis, af the Engelska så kallade Sliding Rules, ringar/ som ock af proportional Cirkel/ hafwande sig til hielp the proportioner man har antört/ som äro emellan innehållen/ sidor och diametrar. Doch kort med cirkel och lineal Fig. 16. giöres ab = 11. a 1 = 14. a B = 21. perpendiclen

me differret. ut ex. gr. $\frac{1}{4}$ pars tonnæ ſi tantam haberet diametrum, quantam tonna integra, tantum etiam menſuræ ſuperfluæ continere poſſet, tunc quadruplicata tonnæ ſuperfluitas daretur. In vinis *liquidisque* aliis elucet idem hoc emolumentum, poſitis altitudine & baſi æqualibus; ſcilicet quod contineri tunc poſſet ſub minimâ vaſis ſui ſuperficie, minimumque obnoxium eſſet vinum exhalationi damnoque ab aere ingruente: nam quo minor ſit ſuperficies in reſpectu ad ſpatium incluſum, eo minus timenda foret noxa e talibus proveniens: & quo majus vas & minor differentia altitudinis & latitudinis vaſis, eo minor eſt ratio ſuperficiei ad ſpatium ſui.

9. In ſtereometricis raro quidem occurrunt dimenſiones Capacitatum in formis ovalibus, licet dolia quadam ſimilitudine videantur poſſe referri ad ovales truncatos, quæ tamen ad cylindros reduci ſolent, e queis media proportionalis extracta ſpatium vaſis quæſitum relinquit; quamvis ſi ad ovalium ſpatia reducerentur, daretur dimenſio illorum uſitato exactior. Notum tamen vulgo eſt, omnia illa quæ *vi quadam* tendi poſſint, ut dolia, aſſeres, rami, tendines &c. curvaturam magis hyperbolicam quam ellipticam capere; & viciſſim omnia illa quæ *ſponte ſua* in ſinum quendam labuntur, & ab ætheris aeriſve niſu & incumbentiâ incurvantur, ut veſtes, lina, vela, aquæ, in parabolæ figuram flecti. Usque tamen facilior uſitata methodus dari poſſet geometrice expiſcandi vaſum prædictorum ſpatia.

Mechanice, ad capacitates corporum Mechanice inveniendas inſervire apprimis poterunt inſtrumenta jam dum in uſum illum elaborata, ut ſunt ſcalæ & lineæ Carolinæ, ſcalæ anglicanæ dictæ vernacula ſua Slidings Rules, circuli, ut & circini proportionales; præſertim adjumento eſſe poterunt analogiæ prædictæ, queis ſpatia, diametri & latera ad ſe invicem gaudent. Breviter tamen, hoc

diclen bB skär them af/ setter man cubrens innehåll efter taflan på aBCDE; så finner man cylindrens på a 12345; och sphærens på abcde. eller söker man sidorna när lika innehåll är/ och setter 222 från a til B; dragande perpendiclen bB och sedan 241 från a til 1. och 276 från a til B, och cubrens sidor efter taflan på a, b, c, d, e, f, så finner man cylindren från a til 12345. Sphæren från a til BCDEF; hwilka äro af olika sidor men af lika innehåll.

Ett lett *analytiſt* sett at *demonſtrera* så thet föregående som annat dylikt *geometrice.*

1. Hwad analyſis algebraica giordt geometrien för otrolig tienſt och nytta/ och then til monga 1000 reſor ökt och lettadt/ lärer hwar och en som har kunſkap therom/ wara bekant: nu will man wiſa ett litet prof at kunna lett demonſtrera så the föregående små analogiſka reglor som annat genom en ginare analytiſt method än then som brukelig är.

2. Men som settet är obekant/ är methodens framſtellande förſt nödig: här tils har man allenaſt betient sig af æqualiteter så til demonſtrationer som andra påfunder; men innan man treffar beſkaffenheten eller proportionen af thet sökta/ så moſte æquationen reduceras och brytas på ätſkilligt sett/ och doch kanſte

idem ope circini & lineæ conficies, vide Fig. 16. ab sit = 11. ai = 14. aB = 21. Perpendiculum erectum interſecet lineas has obliquas omnes. Si dein e tabellâ excerpantur ſpatia atque ab (a) verſus BCDE ordine locentur, reperire licebit ſpatia cylindrorum ab (a) verſus 12345; & ſpatia globorum ab (a) verſus bcde. Vel ſi latera inquirenda ſint ſpatiorum æqualium, opus modo habebis ut aB reſpondeat 222, & ut linea obliqua ai ſit 241, & aB = 276. Erecto prius perpendiculo bB: ſi modo latera cuborum e tabellâ deſumpta ordine locentur ab (a) verſus bcdef, reperientur latera cylindrorum ab (a) verſus 12345; globorum ab (a) verſus BCDEF quorum ſpatia arithmetice æqualia erunt.

Methodus nova algebraico analytica Præcedentia & inſuper alia facillime demonſtrandi.

1. Quem incredibilem uſum analyſis algebraica ſcientiæ geometricæ præſtiterat, & infinities illam faciliorem reddiderat, unicuique, ut putem, qui aliqualem hujus notitiam poſſidet, notum eſt; ſed infinities adhuc adaugeri ut & facilitari poſſe ſperamus, ſpemque ſedulitas ſeculi prioris dederat, ſpemque ſedulitas noſtri ævi forſitan datura ſit: ut etiam periculum nos faciamus, umbram novæ cujusdam methodi dare velimus, licet me adhuc vix tirunculum in his agnoſcere debeam; quâ, inquam, methodo demonſtrari poſſint analogiæ tam illæ quæ præceſſerant, quam plures aliæ, ſed faciliori multo, quam huc usque, negotio. Methodus quidem eſt analytica ſed differens paulum diverſaque a vulgari in uſum recepta.

2. Sed quia modus hic nondum ſit in vulgo notus, licet facillimus ſit, neceſſum eſt principia ejus tradere: nil niſi æqualitates huc usque uſurpavimus ſeu quid analogici demonſtrandum ſive e novo quid analytice expiſcandum foret; ſed ſi quidquam ex illis obtinere voluiſſes,

kanske intet giswa nöje i thet som åstundas: nu som æquationren äro allenast medelpunkter eller lika som en concentrering af några proportioner, så strecker theß nytta sig mycket litet emot then nytta om man gick ut ur thet centro til peripherien, eller ifrån æqualiteter til analogier: doch ingalunda förstående at æquationer giöres onödige och af mig utdömes; som man har them högst af nöden så här wid som i alt annat; undantagande när analogier genom analysin algebraicam påfodras; hwilcket af thet följande bettre kan begripas och fattas.

3. Methoden är således/ när man har twenne linier, areer eller kroppar/ man åstundar genlikhet them emellan/ tå tages begges æquationer och settes emot hwarandra med signo analogico ∴ och opererar med bara divisioner och multiplicationer på sett som wid æquationren sker: tils man reducerat begge tahlen til minsta bråk: och som multiplication och division aldeles intet ändrar någon geometrisk analogie, följer theraf at man kan se the begge liniers eller kroppars genlikhet i minsta tahl.

4. At finna hwad ration en cub har til en innesluten cylinder, så setter man d = diametro eller cubens sido: c = circumferentiæ, tå cuben finnes wara = ddd, och then innesluta cylindern = $\frac{ddc}{4}$; ty settes the ddd ∴ $\frac{ddc}{4}$; brukande division och multiplication at få ett mindre bråk therut/ neml. 4 d ∴ c; thet är i numrar $\frac{14}{11}$ eller 14 ∴ 11. eller som fyrdubbel diameter til circumferentien, så cubens innehåll til cylindrens: och ser man här af at ett oblongum har ock samma ration til en innesluten long cylindre, som ock en area quadrati til en innesluten cirkels aream, neml. som 14 til 11.

En

noſſe te oportuit modum reducendi vel ſeparandi æquationem in analogias ei debitas; licet & ſic tamen vix ſatisfieri poteſt deſiderato. At quoniam æquationes nihil pœne aliud ſint, quam concentratio quarundam analogiarum, conſequitur inde uſum æquationum inferiorem eſſe uſu rationum geometricarum: Neutiquam tamen æquationes inutiles pronuntio, & illas urbico jure privari velim, cum maximi ſint uſus tam in his de queis agendum eſt, quam in rebus multis aliis, exceptis tantum iis quæ analogias ſpectent: ſed ut comprehendi omnia melius poſſint, en illa quæ ſeqvuntur.

3. Methodus talis eſt; datis duabus lineis, areis vel ſpatiis, inter quæ ratio analogica deſideratur, neceſſum eſt utriusque æquationes primum concilientur, quas cum ſigno analogico ∴ compones, operando dein per ſolas *diviſiones* & *multiplicationes*, non aliter quam ſolitum eſt circa æquationes; & hoc eousque dum reduxeris par illud æquationum ſive rationem in terminos minimos. Jam ſicut *multiplicatio* & *diviſio* nunquam variat analogias Geometricas, illæ ſi utrinque æqualiter inſtituantur, ſequitur inde rationes easdem remanſuras eſſe ſed in terminos minimos redactas.

4. Ex. gr. Quærimus rationem cubi ad incluſum cylindrum; ponatur d = diametro vel lateri cujusdam cubi, c = circumferentiæ: habebitur cubi ſpatium = ddd, & incluſi cylindri = $\frac{ddc}{4}$. junctis ergo his analogice, ddd ∴ $\frac{ddc}{4}$, operari licet per ſolas diviſiones & multiplicationes, quarum gratia obtinetur ratio minor ſcil. 4 d ∴ c hoc eſt, ut quadruplicata diameter ad circumferentiam ſuam, ſic ſpatium cubi ad ſpatium cylindri incluſi, ſive in numeris ut $\frac{14}{11}$ vel 14 ∴ 11. Concludes etiam exinde, oblongum ad cylindrum eſſe ejusdem rationis ſcil. ut 14 ad 11. ſic & area quadrati ad incluſi circuli aream.

En cub til en inneſluten ſphaere; cuben är ſom förr = ddd, och then inneſlutne ſphaeren ſom är af ſamma diameter med eubens ſido = $\frac{ddc.}{6}$ Analogien är ddd ÷ $\frac{ddc.}{6}$ och medelſt multiplication och diviſion blir thet 6 d ÷ c, thet är ſom 6 diametrar til peripherien ſå en cub til en inneſluten ſphære, eller i numrar ſom 21 til 11. ſom förr. Hwilket är thet minſta jemne tahlet ſom rymden eller tyngden i en cub har til rymden eller tyngden i en inneſluten ſphaere, ſom juſt med ſin ſuperficie rörer alla 4 cubens ſidor. Samma ration finnes ock wara i en aflong rymd eller tyngd emot en inneſluten ovals: ſom ock om monga glober eller kulor ſkulle opſtaplas i Hexaedral form, och juſt omkring them giordes ett fyrkantigt hus/ ſå wore huſetz rymd til kulornas tilſamman ſom $\frac{21}{11}$.

Men om ſå wore at innehållen i en cub, ſphaere eller cylindre, ſattes för wara lika/ moſte ſkilnaden ſtiga wti ſidorna och i diametren; ty en kannas rymd har en större diameter i en ſphaere är hon har ſida i en cub: at finna ration emellan en cubs och en cylinders ſida begge af ſamma innehåll/ ſå ſetter man cuben wara = ddd: och finnes igenom en liten räkning en cylinders lengd eller höjd/ them man ſetter lika/ wara = $\frac{2dd}{Rq.\,cd}$ medelſt analogien ddd ÷ $\frac{2dd}{Rq.\,cd}$; finner man theß minſta bråk wara Rq. cd ÷ 2 d eller ſom 141 ÷ 122. thet är ſom radices cubicae 14 och 11. Men ſkulle man ſupponera lengden på cylindren wara lika med cubens ſida/ frågas ſkilnaden i theß diameter, när innehållen äro lika/ ſå finnes then wara ſom radices quadratæ 14 til 15 eller ſom 3,742 til 3316.

En cubs ſida til en ſphæres af lika innehåll/ ſom nu cubens

är

Cubus ad globum inclusum; cubi spatium est ut modo ∷ ddd; & globi eidem cubo inclusi invenitur æquale esse $\frac{ddc}{6}$; queis signo analogico conjunctis ddd ∴ $\frac{ddc}{6}$, nascitur ope divisionis & multiplicationis 6 d ∴ c, hoc est, ut sexduplum diametri ad peripheriam, ita spatium cubi ad inclusi globi spatium, quod in numeris est ut 21 ad 11, ut prius: quæ minima ratio est qua spatia vel pondera cuborum ad spatia vel pondera inclusorum sibi cylindrorum gaudere possint. Ejusdem etiam rationis est pondus vel spatium oblongi ad spatium inclusi ovalis: prout etiam, si congesti sint in unum globuli, & conjunctim in situ hexaedrali jaceant, hoc est, ut unus alterius verticem tangat, si hos circum constrüeretur quadrilatera domus, id est, 4 parietibus constans, foret spatium ædificii hujus ad spatium globorum ut 21 ad 11.

Sed spatiis cylindri, globi, cubique &c. positis æqualibus, latera omnino & diametri discrepabunt. Nam spatium unius canthari minori gaudet diametro si in globo contineatur, quam gaudet latere in cubo vel cylindro. Jam quia invenienda sit ratio laterum cylindri & cubi, qui ejusdem sint spatii, ponatur cubus æquivalere ddd: & datâ per calculum longitudine, sive latitudine cylindri ejusdem cum priori spatii esse ∷ $\frac{2dd}{Rq.\,cd}$, queis analogice junctis ddd ∴ $\frac{2dd}{Rq.\,cd}$, in minimos terminos videmus rationem versam esse, scilicet in Rq. cd ∴ 2d. Sive in numeris 141 ∴ 122; hoc est, ut radices quadratæ 14 ad 11. Sed si longitudo cylindri supponeretur æqualis lateri cubi, & quæreretur baseos ejus diameter, sed nihilominus spatia sint æqualia: reperietur ratione illam esse sub duplicatam, sive ut radices quadratæ 14 ad 11, hoc est, ut 3742 ad 3316.

Latus cubi ad diametrum globi cujusdam æqualis spatii: quo-

är = ddd, och sphaerens finnes swara emot $\frac{6dddd}{c}$; så är

thess minsta ration som Rc. $\frac{=}{6d} \div$ Rc. $\frac{=}{c}$ eller som radices cubicae 11 ÷ 11. thet är som 176 ÷ 222. Samma ration och liklynthet behålla monga glober ihop/ som om the opstaplades i ett cubiskt 4 kantigt rum/ om tå rummetz sida wore 176; och man stöpte sedan alla kulorna ihop til en cub, så blifwer cubens sida 222. Eller/ om man hade oblonger och man åstundade ovaler, som hade en diameter lika long med cubens sida/ och the begge af ett innehåll/ så wore the olika sidornas ration som radices quadratæ 11 til 11. och så widare.

5. När man opererar med sådana bokstäfwer som kallas constantes eller stadiga i sin ration, som diametrar och peripherier, hwilka altid hålla sin genlikhet emot hwarandra/ så i stort som i smått; så kan man strax bringa bokstefren til numrar, och bruka arithmetiskt analogie i stelle för then analytiska then man medh algebraisk tilhielp funnit: men komma sådana bokstefwer fram som kallas inconstantes som ordinatæ och axes vti curvis äro och vtföres med x, y och z, så moste thess analogie stanna i bokstefwer; i ty ingen stadig arithmetisk proportion gies som swarar theremot. Af föregående exempel har man några små prof atse huru analogier och genlikheter lett kunna demonstreras, påfinnas och behållas: och som thess nytta strecker sig widare vt/ så i mechanicis til alla slags machiner, storleker/ tyngder och lopp/ som i Physicis til the genlikheter/ som naturen är bunden til och spelar hela sin tour igenom/ innan hon kommer til sitt æquibrium, ty wil man ännu några exempel framdraga.

6. Jag

quoniam cubus est = ddd, & diameter globi detur $\frac{6dddd.}{c}$ habebitur minima ratio: ut radices cubicæ 6d ∴ c; sive ut Rab.Cub. *21* ad *11*. hoc est ut 276 ad 222. Eandem hanc rationem conjunctim cubi inter se retinent, ut si unus supra alterum cumularetur, jacerentque in hexaëdrali situ; & dein omnia hæc spatio quodam cubico vel domo 4 parietum clauderentur, si spatii hujus latus esset = 276. Jam si conflarentur omnes hi globuli in unum cubum, foret latus cubi = 222. Vel si corpora oblongiora reducerentur in oviformia, ovique una diameter æquare supponeretur latus cubi, ita ut utrumque ejusdem sit spatii, foret ratio laterum differentium ut ratio radicum quadraticarum $\frac{21}{11}$ & sic porro.

5. Sciendum etiam est, si operatio hæc analytica per literas, quas constantes dicimus, instituatur; *constantes* dicuntur, cum in illis constans aliqua ratio undiquaque dominatur, prout illa diametri ad peripheriam in circulis est: tum transformare licet literas in numeros, & analogiam arithmeticam loco analyticæ & literalis substituere: sed si literæ, quas *inconstantes* appellamus, intersint, ut sunt ordinatae & axes in curvis & per x, y, z efferuntur, subsistet omnino analogia in meris literis, quia nulla in illis constans ratio est, quam calculus arithmeticus unius rationis ope exprimere valeat. Ab exemplis videre licebit usum, quem in rebus expedite demonstrandis, e novo indagandis comprehendisque insignem habeant: Utilitas ejus, quia extendit se tam in Physicis ad omnes illas convenientias & harmonias queis ipsa natura addicta est, per quas cursum suum agit ludumque ludit quoties ad æquilibrium suum tendit, quam in mechanicis ad omnis generis Machinationes, magnitudines, pondera & motus: ideoque aliqua adhuc exempla in ejus rei gratiam afferre volo.

6. Jag åstundar weta en parabels proportion, eller hwad egenskap theß ordinatæ, parameter och axes hafwa sins emellan; theß æquation är $px = yy$, eller $x = \frac{yy}{p}$: settes analogien således $y \div\div \frac{yy}{p}$; finnes then wara genlik med $p \div\div y$: thet är p: y: och x, åro i en proportione continue geometricâ. Eller åstundas en hyperbola æquilatera, hwars aequation är $pp = xy$. så finnes x. p. y. wara efwen i en proportione continue geometricâ, doch med then åtskilnad at i Parabeln är $= p$, som är en litera constans, wti en af extremis; men wti hyperbolâ æquilaterâ är (p) eller parametern mitt wti.

På thylikt sett finnes samma hyperbola wara i en harmoniſt proportion, som bewiſt är i Dædalo 1. öfwer dåntuben: så ock befinnes igenom wår analytiſka method Parametern i en ellipſi och begge ſidorna therifrån eller från foco wara juſt i en proportione harmonicâ; hwilket som förr intet bekant lärer wara / torde thet lända til wnderwisning / hwad egenskap ellipſis har med liudet och hörßlen / när thet kommer at concentrera ſig i theß foco.

7. Nu ſom naturen ſpelar alla ſina wärk igenom proportioner innan hon kommer til ſitt æquilibrium, at man billigt kan kalla naturen wara en idel ſammanſatt analogie; och faſt thet ena ſkulle ſynas wara ſkiljachtigt ifrån thet andra / ſå är thet doch intet annat än en ſammanſettning af analogier; ſom ſes af proportione harmonica, hwilken är en geometriſk och arithmetiſk genlikhet ihop: ty ſkulle man kunna ſluta / at alt ting wore lettare at fatta ſå ock i ſig ſielſt naturellare, om man giorde ſig bekant analogier i ſtelle för æquationer när ſå fodras: ty wigare wore at begripa thet 3 linier hade en harmoniſt proportion ſom p. x. y. än at $\frac{py - px}{x - p} = y$ ſom doch

alt

6. Scire cupio rationem Parabolæ, quæ ordinata inter parametrum & axes sit : æquatio ejus est $px = yy$. sive $x = \frac{yy}{p}$. sint analogice ita $y \div \frac{yy}{p}$; ex quo fit $p \div y$. hoc est p, y, x, esse in proportione continue geometricâ. Vel analogia hyperbolæ æquilateræ, cujus æquatio est $pp = xy$; videbis etiam x. p. y. esse in proportione continue geometricâ: sed hoc cum discrimine, quod in Parabola Parameter sit = p, & litera hæc constans unum extremorum occupet, sed in hyperbolâ æquilaterâ locata sit in medio.

Invenies etiam hac calculi ratione, Hyperbolæ huic rationem harmonicam ineſſe; si juste abscindatur, quod ostensum est Dædalo 1. ad tubum Stentoreum majorem. 2. Invenies etiam, Parametrum ellipseos & Sectiones illas axeos, quæ utrobique a foco sint, esse in proportione exactissime harmonicâ : quod quia huc usque ignoratum fuit, dabit fortasis hoc ansam, naturam soni & auditus in ellipseum focis ulterius indagandi.

7. Jam quia peragit cursum suum natura luditque per analogias, cum ad æquilibrium suum naturale tendit, ita ut juste illa appellari analogiarum quædam contextura mereatur, mirum haud erit si illarum innumera varietas detur, quæ persæpe suboritur ex eo quod una ratio alteri sit innexa: sit exempli gr. proportio harmonica sive musica, cujus differentiæ sunt in ratione extremorum, quæ duabus analogiis constat, una Geometrica altera Arithmeticâ, ex qua etiam videbis, comprehensu facilius esse & naturæ convenientius loco æquationum adsvescere analogiis: annon compendiosius est meminisse tres lineas harmonice similes esse ut p. x. y. quam $\frac{py - px}{x - p} = y$: quod

alt ett år / eller at säja thet p†x: p†y:: y. wore continue proportionales, än at y wore = $\frac{pp†2py†y}{p†x}$ som doch thet samma är: doch ingalunda härmed / som tilförene sagt är / bör betagas æquationren theras nytta / bruk och rum / hwilka tiäna så at hitta wär analogiska ginwäg / som at giswa nöije i alt thet / som analogier intet så wigt kunna tilkomma.

8. Och som naturen som sades / spelar igenom analogier, tils hon stannar i sitt æquilibrio; så kan man formera sig så monga slag af them som i beqwemligit bruk wore nödiga: som i proportione geometrica kan så continua, som duplicata, harmonica, demiharmonica, simplex, mixta &c. finnas / och på them åter några 10 a 30 ändringar; hwilcka naturellare wore at behålla / som lettare at finna än theß æquationer: kommer ock thet thertil at en æqualitet är allenast en medelpunckt af monga 1000 analogier: ty når literæ inconstantes, som x, z och y uti curvis hafwa en wiß genlikhetz wäg / gå the alt mer och mer tilhopa / tils the komma i en æqualitet: hwar om bettre en annan gång.

9. Thetta är sagt om then geometriska proportionen, som låter minska och reducera sig igenom division och multiplication: man finner ock mongt ting i naturen lempa sig efter then arithmetiska / then man nu doch ganska litet anser; hwilcken likwel har sin wärckan i naturen nästan så mycket som then geometriska / och thet ibland för sig serskilt och ibland tilsammans. Som når man wil bringa twenne tahl til æquation, och man brukar thertil alla 4 species arithmeti-

ces,

tamen idem eſt. Vel dicere $p + : p + y :: y$. eſſe geometrico continue proportionales quam y eſſe $= \frac{pp + 2py + yy}{p + x}$ quod tamen in idem recidit. Usque tamen ſcias, neutiquam me æquationes improbare, quin imo eis magis applaudere, cum non modo, ut vides, inſerviant analogiis noſtris indagandis, ſed ſingillatim in multis proderint, in illis præcipue in quibus æquationes per ſe absque analogiis ſint conducibiles.

8. Cum natura, ut modo dixi, ductu legis ſuæ ludat analogice, formari poſſunt tot earum genera, quot uſui communi obvenire poſſint; dantur in geometricis tantum analogiæ tam ſimplices, quam continuæ, harmonicæ, mixtæ ab utrisque &c. e quibus rurſus 10 vel 20 formari varietates poſſint, quae, ut dictum eſt, inventu comprehenſuque faciliores ſunt, quam fortaſſis receptæ in uſum æqualitates. Accedit & hoc quod æqualitas nil fit niſi concentratio multarum analogiarum, ſeu æquilibrium in quod analogiæ varie recidunt, nam cum literæ inconſtantes x & y, ut in curvis, per analogiam ſuam propius propiusque acceſſerint, tandem in æqualitate terminantur. Unde apparet, anguſtiori loco incluſas eſſe æquationes, ſed analogias latius ſe extendere poſſe.

9. Hoc dictum eſt de proportione Geometricâ, quæ ope multiplicationum & diviſionum ad minores terminos reduci ſe patitur: at reperire licebit res multas arithmetice etiam proportionales eſſe, licet de analogia iſthac parum ſolliciti fuimus; usque tamen per illam ludit natura tam crebro quam per Geometricam, jam ſingillatim, jam conjunctim, ut ſi videre velis in æqualitatum quâdam ratione, num in illa ſit analogia arithmetica, num geometrica; cum, inquam, more conſueto ad minimos terminos reducitur æquatio, ſi in operatione omnes 4 ſpe-

ces, är tekn at therwti finnes så en Arithmetiſt ſom Geometriſt proportion.

10. Igenom then förbemelta methoden kan ock alla arithmetiſka proportioner finnas; men man brukar blott *addition* och *ſubtraction*, på lika ſett man brukat förr diviſion och multiplication.

11. Til exempel wil jag något anföra ſom wår analytiſka method har förſt ſedt och prófwadt: ſom om man giór ſig en rätwincklad triangel AED (Fig. 17.) och tager puncten B hwar man wil/ drager ſå från ſidans AE punct hwar man wil til begge puncten C och D, ſom ACD. BCD. a CD &c. ſå ſäger jag at alla theſſa liniers quadrata äro i en proportione Arithmeticâ; ſom Quadrata AC och DA; ſå Quadrata BC til BD: och Ca til Da; ſå ock Quadrata EC til ED. Giór man EF ſå long ſom EC och drager en ſemicirkel therpå/ och giór triangeln CSD ſom ſynes/ ſå följer at quadrata CD och CS äro i ſamma proportione Arithmetica.

Bewis AE = a. DE = d. CD = c. ſå är $\overline{AD}^2$ = aa + dd. och $\overline{AC}^2$ = dd − 2dc + cc + aa: när nu theſſa reduceras Arithmetice, thet är igenom ſubtraction och addition til mindre tahl och termer, tå ytaf genlikstahlet dd − 2dc + cc + aa ÷ aa × dd, bliſwer en liklynt faſt mindre ration cc − 2dc ÷ * eller cc ÷ 2dc, hwilket är thet ſom fodras; neml. at alla theſſes Quadrata lyda arithmetice ſins emellan lika/ och lika med Quadratis CD och CF i Semicirkeln. Här af kan ock ſlutas/ at om thet giöres från AE ſå monga höga eller låga trianglar ſom behagas til punctren C och D: ſå wore theras dif-

ſpecies arithmetices uſurpentur, indicium eſt æquationem conſtare proportione Arithmetica æque ac Geometrica.

10. Ope prædictæ regulæ poterunt analogiæ omnes arithmeticæ etiam in terminos minores reduci; ſed loco diviſionum & multiplicationum, ut in prioribus, uſurpanda hic venit *additio & ſubtractio*.

11. Exempli loco adducam quidpiam quod analytica noſtra methodus perſpexerat primum & experta fuit: ſcilicet Fig. 17. ducatur triangulum rectangulum AED e puncto B: dein a lateris AE puncto quocunque velis educas lineas ad puncta duo C & D: ſcilicet ACD. BCD. a CD. &c. Queis peractis dico harum omnium linearum Quadrata eſſe arithmetice proportionalia; ſcil. ut ſunt Quadrata $\overline{AC}^{-2}$ ad $\overline{DA}^{-2}$: ita ſunt Quadrata $\overline{BC}^{-2}$ ad $\overline{BD}^{-2}$, ut & $\overline{Ca}^{-2}$ ad $\overline{Da}^{-2}$; & $\overline{EC}^{-2}$ ad $\overline{ED}^{-2}$. Inſuper ſi EF ſit æqualis EC, factoque ſemicirculo & triangulo CSD, ita ut vides, dico quadrata $\overline{CD}^{-2}$ & $\overline{CS}^{-2}$ eſſe in eâdem proportione arithmeticâ.

Demonſtratio, AE $\doteq$ a. DE $\doteq$ d. CD $\doteq$ c. eſtque $\overline{AD}^{-2} \doteq aa + dd$, & $\overline{AC}^{-2} \doteq dd - 2dc + cc + aa$. reductis his arithmetice ad minores terminos, ope ſolius *ſubtractionis & additionis*, tunc ab anologicâ ratione $dd - 2dc + cc + aa \div aa + dd$ oritur minor ſed ei ſimillima $cc \div 2dc \div^{*}$ vel $cc \div 2dc$: ſcilicet quadrata omnium harum eſſe arithmetice proportionalia ut $cc \div 2dc$, ſicut & quadrata $\overline{CD}^{-2} \div \overline{CF}^{-2}$ in ducto ſemicirculo, quod erat demonſtrandum. Obſ. Ex his etiam concludi poteſt, ſi Triangula quotusque placuerit, a latere AE demiſeris ad puncta C & D;

differentiæ Quadratorum altid lika / ſom $\overline{AD}^{-2} - \overline{AC}^{-2} = \overline{BD}^{-2} - \overline{BC}^{-2} = \overline{ED}^{-2} - \overline{EC}^{-2}$. och then differentien är altid lika med Quadrato $\overline{DS}^{-2}$.

12. Faſt än wi litet hafwe brydt oß om then Arithmetiſka proportion, finnes doch then ſtrecka ſig inmot ſå widt ſom then Geometriſka; i ty then kan delas i lika monga ſlag och ſorter, hafwande ſå ſimplicem, ſom duplicatam, harmonicam &c. vti ſig. Hwilket alt bettre ſes kan/ när man får rådrum klarligare thet at vtföra/ thet man beſparer til annat tilfelle; med förmodan at thenna lilla anledningen eller ſkuggan theraf nu förſt intet mißlikes.

C & D; forent differentiæ quadratorum omnium æquales, ut $\overline{AD}^{-2} - \overline{AC}^{-2} = \overline{BD}^{-2} - \overline{BC}^{-2} = \overline{ED}^{-2} - \overline{EC}^{-2}$; Quæ differentia æqualis eſt Quadrato $\overline{DS}^{-2}$.

12. Quamvis hactenus parvi duxerimus Proportiones Arithmeticæ debitas, usque tamen videre licebit extendi illas pœne tam late quam Geometricas; eſſeque diviſibiles in tot ſpecies in quot usquam geometrica; gaudet enim ſimplici æque ac continuâ, harmonicâ, duplicata, mixtâ &c. quod adhuc clarius, Deo volente, patefiet, ſi locus detur amplius de his diſſerendi; quod ſpero alius temporis & occaſionis erit, ad quod faciendum ſtimulabor, ut primum compertus ſim ſpecimen hoc novi calculi vel umbram Orbi Geometrico non valde diſplicuiſſe.

VI.

DÆDALUS HYPERBOREUS

Eller

Mathematiſke och *Phyſicaliſke*

Förſök/

För Aprilis, Maji, Junii Månader 1717.

Ett Prof

At wiſa Bombers och Kulors Bogſkott: giordt och anſtelt af Herr Commercie-Rådet *Chriſt. Polhem.*

§. 1.

HWad Bogſkott och thylikt angår/ har emellan the lärda warit en twiſt. The ſom följa naturen och rekningen effter/ holla före/ at en kula giör en rett kaſt-linia, ſom kallas Parabola. Men the ſom afmåta bemelte boga med ögn-mått / the holla annorlunda före; nemligen at hon brantare far ned åt än opp åt: ſom ock at hon i ſitt högſta opſtigande miſtar all ſin fart hon vndfådt har af krutet. Förrän werckſtellningen med rekningen kan förlika ſig / moſte profwen fram: i ſmerre alratörſt/ hweraf ſlut kan giöras til thet ſtörre/ ther ſamma genlikhet qwarbollen blifwer.

§. 2. Til then endan har Herr Commercie-Rådet *Chriſtoph. Polhem*; wår Swenſke Archimedes, (hwars berömwercket ſielf beropar)· lemnat ett prof therpå alment i Kongl. Bergz Collegio, ther thet ännu kan ſes och giöras. Thet ock wunnit har biſall af Högwelborne Herr General Majorn *Carl Chronſtedt*:

Som Skiutarkonſten i ſielfwa Wercket högre har bracht än någor i wår tid, och efter honom härbringa lärer. Lendande til wårt witra beröm / at i then ſtora Monarchens wår allernädigſte Konungz Regeringz tid / Swerje har en ſå widt berömd förmohn af the monga kloka och ehrfarna i the ſaker ſom Attollerie, Mechanic. och ſteps-byagnad angår; hwilket tilſtrifwas bör thet höga förſtånd Haus Majeſtet ſielf ther vti äger.

§. 3. Af thetta profwet wiſes klart / at alla bomber / kulor / följa kaſt-linien efter och ingen annan. *GHF* är en Ram / en ſamn eller mer i höaden; ſtolparna af trä; belt omkring i Cirkelſteg / thet är Grader, hwilkas Medelpunct är A. På thenna ſidon äro giorda twenne Ledſtenger AB och DC, ſom hafwa ſina Led-Puncter wid A och D, ſammanſatta med en twerlinial BC. Emellan ſamma Ledſtenger träder man in meßingz tråar lika ſkilda then ene ifrån then andra / ſom ſes af ritningen.

På then öfra linialn eller ledſtongen i theß omwendningz punct / ſtelles et litet metall-ſtycke / eller et annat metall-rör / hwar igenom en kula kan med krut / fiäder / balliſt eller kaſtning opföras. Machinen ſåledes med alla ſina tråar tilberedd / höjes op til 45. Cirkelſteg: tå drages en linia ifrån puncten A enda fram och på then ritas en kaſt-linia thet är en parabel / hwars högd ifrån (o) är fierde dehl ſin lengd AC. Paraboliſka wägen puncteres antingen med ſtickes endar eller perlor / eller något annat ſom utwiſar then bog linian.

§. 4. När nu kaſt-linien til 45. Cirkelſteg / ſåledes är ovrktad / ſå följer af theß natur / at om hela Machinen höjes til högre eller lägre Cirkelſteg / til 60, 70, 80. 30. 20, 10. At ſamma puncter eller perlor beholla en kaſt-linia och rita paraboler ovanligen the ſamma ſom kulorna med lika krut giöra / enär ſtycket til ett annat Cirkelſteg warder ſtelt. Samma ſtelning på Machinen giör ſamma Parabol med kulan / hwars ſtycke jemwel har ſamma ſtellning.

§. 5.

§. 5. At nu anstella profwet / så festar man wid the demelte puncter små pappers lappar hel löst / just effter Paraboliska raden ; och låter så en liten kula med tilpaßad krut vtfara vr stycket (a) ; tå man ögonskenligen skal se / at kulan gör samma wåg som puncterad är / afhendande med sig alla the lappar som i wågen äro. Stelles nu Machinen til en annan Grad, högre eller lägre / beholl ande lika krut och lika kula / så göres jemwel samma Parabel som puncterad är / och med lösa papper omsatt.

§. 6. Emedan nu stycket är fastsett effter Medel-Punct Linian ; och kast-linien har then egenskap at når then opritad är til 45 Cirkelsteg at kast-linier altid blifwa af / ehuru thenna Machinen föres op eller ned. Nemligen / the kast-linier som kulan gör med samma krut / fast stycket är stelt til en annan winckel : ty följer / at om puncterna vtmerkes widare med lappar / som lett afhendas kan / at kulnn som vtlöper til en annan winckel vtwisar wågen / som jemwel är then puncterade.

§. 7. Thetta profwet har blifwit föreställt och lemnadt ögonskenlig bewis ; at kulan i all högd eller jenckning följer paraboln effter / och gör ingen annan krok eller bögning i sitt nedfallande än i sitt opstigande. Ser man thet i the mindre kulors fall / så kan säkert theraf slutas til the större / emedan then insteñer med vträkningen och med Blondels och andras meningar. At monge göra här inkast emot / är orsaken / at the äro förledde af ett falskt ögnamerke / som wisar sig på Optiskt sett / annorlunda når kulan är när än longt ifrån / annorlunda bröstwerdt än sidwerdt.

§. 8. I smått kan samma redskap eller Instrument göras / och paraboln på Silckes endar opritas ; hwilket tiena kan at wisa winckelen eller lengden för en som richtar stycke. Om lengden åstundas / föres Machinen op och ned / til theß samma lengd erhölles emellan AO, tå ser man winckelen som stycket hafwa bör / antingen vnder eller öfwer then 45. Graden. Twert om når winckelen är bekant / finnes lengden / ja hela Parabeln / enlig med stycketz ställning.

En lett vträkning

På kulors samman leggningar vti Triangel-Stapel

af Aſſeſſ. EMAN. SVEDBERG.

HOs them ſom kunſkap ſåga i Structurkonſten/ är wel en vträkning therpå bekant: nemligen/ at när foten eller fotlinien i en triangel-ſtapel är kunnig/ at ſielfwa ſtapelns inneholl jemwel är funnen. Men ſom then räkningen är något widlyfftig/ lärer minnet intet finna ſitt nöije; ty har jag warit betenkt på en annan/ ſom/ kan hända/ för ſin letthet ſtul winner bätre behag. Om

Fotlinien är 3.

$$\frac{\overset{4}{\cancel{16}}}{}$$

Exempel 6. 3 : 20 : 10.

Fotlinien är 5.

$$\frac{\overset{6}{\cancel{36}}}{}$$

Exempel 6. 5 : 42 : 35.

Fotlinien är 6.

$$\frac{\overset{7}{\cancel{49}}}{}$$

Exempel 6. 6 : 56 : 56.

Fotlinien är 10.

$$\frac{\overset{11}{\cancel{121}}}{}$$

Exempel 6. 10 : 132 : 220.

Fotlinien är 12.

$$\frac{\overset{13}{\cancel{169}}}{}$$

Exempel 6. 12 : 182 : 364.

Fotlinien är 20.

$$\frac{\overset{21}{\cancel{441}}}{}$$

Exempel 6. 20 : 462 : 1540.

Thet är / 6 beholles altid i första rummet: vnderſta fotlinien i thet andra. (1) Til med theß Qwadrat-förhöjning i thet tredie; och ſöker ſå vt effter Genikz-regelen then fierde nummern / ſom är Triangel-ſtapelns inneholl.

På annat ſett.

MEd blott ſammanleggning kan ſemwel iñehollen af Triangel ſtaplar inhemptas / neml. om 1. 2. 3. 4. 5. &c. och theras Qwadrat-förhöjningar legges ihop: ſå är helfften ſtapelns inneholl.

Fotlinien är 3.

Ex. 1
2
3
1
4
9

20

helfften 10 innehollet.

Fotlinien är 6.

1
2
3
4
5
6
1
4
9
16
25
36

112

helfften 56 innehollet.

Nemligen numrarna med ſina förhöjningar legges alla tilſammans och ſedan halfweres.

På annat ſett.

SKer ſemwel med ſammanleggning / neml. om ſkilnaden emellan hwar nummer tilökt blifwer med (1) och giöres ſå många tahl ſom kulor äro i vnderſta fotlinian.

Om Fotlinien är 3.

1
3
6

10 innehollet.

Om Fotlinien är 6.

1
5
6
10
15
21

56 innehollet.

Nem-

Nemligen emellan 1 och 3 år stilnaden (2); emellan 3 och 6 år stilnaden (3); emellan 6 och 10 år stilnaden (4); emellan 10 och 15 år stilnaden (5); och så widare 6/7/8: i ordning/ till thess så mong tahl bliswa/ som kulor äro i Stapelens fotlinia.

Ett Experiment eller Prof hwar med Skepsbygnaden kan befodras.

WAd Skeps bygnaden widkommer/ så är nu then högre bracht medels så många åhrs förfarenhet och witra mänsvnderſök/ at förmåtit kunde synas/ at biuda til at giöra förbätring eller tilökning ther vti; men swares ther på/ at ingen Mechanist konst är än så högt kommen/ at icke mycket felas til fullkomligheten/ och förbätras kan/ så lenge werlden äger them som förstånd och efterdöme jemte erfarenhet äga: men samma förbätring kommer i somt på en blind lycka/ efwentyr och tiders försök an; i somt kan then tilstyndas medels Geometrien och thess förſökz och profs tilhielp. Är nu heller en sådan wisshet i skepsbyggningz-konsten ännu wunnen/ at en Byggmestare förvt fullkomligen wet sitt skeps fördehl emot en annans/ vtan moste medels ändring i hwart serskilt söka mer och mer sin förkofring: ty följer at konsten ännu står i wexten.

2. The lärde hafwa än intet wågadt sig longt vt på diupet i thet som Skepsbyggnader angår/ emedan them har mött swårigheter som the intet sedt sig öfwerkomma. Skapnader som skepp bestå af/ så endalengz som sidwerdz före/ äro obekante bogliniер/ hwars egenskaper intet inhemtas kan/ förrän erfahrenheten har giordt et wisst slut ther vti. Jemwel i thenna Mechaniken har man orsak at prisa wårt Landz förmohn emot andras: Mäster Scheldon och Mäster Smitt hafwa inlagt the prof thervti/ at mera them intet nekas kan the första rummen ibland them/ som nu konsten med them öfwa.

3. Vti

3. Vti sådana saker / som sades / kan doch medel finnas at tilstynda sig wettskapen / utan at låta komma an på så många åhrs efwentyr ; hwilket ske kan med profs anstellande i smerre / ther af reglor ut finnes som tiena til oplysning i thet större / så för them som sig byggnaden hafwa bekant / som jemwel för them som tencka at föra thet inwnder rekning.

§. 3.

Profwet : thet sammanslås en long renna af 3. 5. eller 6. famnar / ju lengre / ju bätre / lik med then som beteknas med (H) Framman före är en träboge med en rull (E) ofwan på. Omkring bemelte rull går en trå FED, som har tyngden (F) på sin ene enda / och är festad wid (D) på then andra. (b ac) är ett modell af ett slepp. På sidon henger til bruk en pendel-kula (K).

§. 4.

När profwet anstelles / förskaffar man sig monga slaag modeller ; binder masten (D) fast wid trän / låtande lodet (F) draga fram thet : när lodet sleppes löst / sleppes jemwel pendel-kulan i gångz / och reknar så swengningarna til modellet stöter an wid (h) : och så thet ena modellet effter thet andra.

Ther modellerna aro lika tunga / som jemwel tyngden (F) lika så wijer pendel-swengningen tiden / hwilket thera af them forst kommer fram och stöter an wid (h) : theraf kan sedan slutas / at när samma krafft och wäder drifwer thet ena som thet andra / at thet ena har mabbare och lettare fart under samma tid / än thet andra. At wara än nogare här ut / kan pendel-kulan så settas / at begge kulorna i samma ögnablick komma i gång som ock at Pendeln utwisar tiden på en wijare.

§. 5. At

§. 5.

Alt hwad skepp tilhörer / kan härigenom sålunda wisas.

1. Skeppets skapnad: Modellerna göres på åtskilligt sett / thet ena med spitzig / bred / flat / hyperbolisk eller paraboliſt buk; thet andra med högt / lågt / spitzigt eller bredt bröst / så wel fram som på sidorna: modeller på Jachter / örlogsskepp / Brigantiner, Fregatter &c. på ehwad som erfahrenhet redan har gifwit bruk / ju flera ju bätre. The wäges förut och göres lika tunga. Sedan anstelles profwet och jes noga effter / hwilket af them först hinner til mählet med samma drecht och lop. Trän bör wara lika högt ifrån watnet på alla. Här af kan slutas til alla former och skapnader som skepp böta äga.

2. At finna masternas retta rum och stelle: Masten kommer sellan i sitt retta rum medels sin första inpaßning / utan bör offta flyttas innan skeppet ernår sin retta krafft och fart. Som ock i thet ena skeppet bör masten stå hel fast / i thet andra hafwa ett spelrum. Ja i thet ena stå opp och ned / i thet andra lutad / effter som bröstet fordrar. At profwa thet / så flyttes masten fram och tilbakars; gies litet / stort eller intet spelrum; och erfares med hwilket modellet löper snabbast an til (h) / giörande sedan ett slut theraf til masternas retta stellen.

3 Ballastens retta rum. Therom twistas ock: thet hender offta at ett skepp har ingen fart / ther icke ballasten flyttes ti ett helt annat stelle; nu minstas / nu ökes: af orsak at retta skeppets medelpunct intet är treffad / som på en gißning ankommer. Flyttas nu i bemelte modellen sten i stelle för ballast fram och tilbakars / kan pröfwas thermed farten.

4. Hwad drecht och krafft seglen hafwa: Emedan ett wäder / som håller ett legel stindt och förer skeppet framåt / är lika med en annan krafft som drager skeppet samma wäg. At göra prof ther på / så bindes trän i masten (d). nu högre nu lägre /

lägre / så ock wid masterna (b) och (c), och ehrfares hwad fart thet vndfår theraf. Är samma lod och trän flyttas högre opp / så winner thet strax bätre fart / än ner wid: emedan ett litet segel ofwan til kan göra så myket som ett stort nedan til. När thetta profwet anstelles / bör bogstifwan II flyttas opp och ned / så at trän ED kommer just i jemn-linia med watnet.

5. Jemwel kan här pröfwas / huru stora eller små seglerna böra wara; hwareft wanten bör komma / och then med Jungfruerna festas; huru härdt tilspendt then bör wara / med mera som skepp tilhörer.

6. Skeppets åtskilliga fart i mindre eller starckare blåst kan pröfwas af större eller mindre kodz tilsettning: man ökar tyngden (F) med (g) eller flera; när nu dubbel eller trippel krafft tilkommer / så kan theraf jemwel slutas / hwad skepp i stor storm alrabest vthärdar.

7. At pröfwa hwad Ebb och flod göra kan til skeppets fartz tillökning: tå aftages lodet och trän / och göres ett bohl framman före / minder eller större. Om nu watnet får rinna vt / så drager sig modellet i thet samma medels sin senckning til (h); hwad fart theraf tilkommer skeppet / ser man af lodswengningen; hwilket efter wahnligheten tillegges eller frändrages then andra skeppets fart.

§. 6.

Alt öfrigit hwad skeps-mechanik och bygnader tilhörer / lärer sålunda härigenom pröfwas / och profwet sedan til rekningz eller i wercket föras. Hwad egenteligen skeps-stapnaden angår / är ei heller mitt endamåhl här at wisa / lemnande thet them som saken bätre vndersökt och pröfwat hafwa. Thetta gier allenast anledning / huru kunskapen alt mer och mer befodras och tilskyndas kan.

Bewis at twärt lefwande wesende består merendels i små Darringar thet är Tremulationer.

af *Assess. Eman. Svvedberg.*

Förr än en owahn och obekant ting kan giöras trowerdig/ bör til grund leggas säkra och otwifwelachtiga reglor / ther meningen sedan på byggas kan.

I. Daringz eller *tremulations* Regeln.

Then fasta och hårdn Naturen; so n trä/ sten / berg / metall / är underkastad stora darringar af ett litet anrörande.

Thet pröfwes wid byggningar och städer; af en wagn förmerkes ett hus / slott och berg darra och dalra: af en liten hamring en hel klippa: en klocka darrar af en minsta nåls knackning / ja så at hon luder: i endan på en mast kan kennas hwad skrifwes och rues i andra endan: ett litet slag kan på en mils stonggång höras / ja om enden allenast anrörer ett strengstal på clawer eller annat tåylikt spel. Ett slott / ett öfwer- eller under-jordiskt fall höres til 20. a 30. mihl / och giör at hus och städer dalra. Häraf blifwer slutet at en minsta ting kan förorsaka en stor darring.

II. Darringz Regeln.

En stind hinna föres alrabeist i darring.

En streng som af hinnor giord är / giör ju bet sta ljudet thet är darringen. En hinna är man ett ytterst eller en superficies af en hård ting / hwilken förr emottager darringen än en kropp / som at tbe tga hinnor och superficies består och thet i samma genlikhet som qvadraten har sig til cuben.

III. Dar-

III. Darringz Regeln.

Thernest kroppar som härde äro och af en fäder-art / darra bestthe lenare och miukare minst.

THe skiöreſta och härdeſta metaller häfwa ju klang / ſom jern / ſtål; ſom koppar och tenn tilſammans: the ſmidigare / ſom gull och bly / hafwa mindre; ja the miukare ting / ſom ſand / ler fäder / althingen.

IV. Regeln.

En ſtrengz darring kan föra en annan ſtreng med ſig i darring. en hinna en annan ꝛc. Om the ſtå i en tohn ſtemda.

RÖres en lutſtreng an / ſå darrar then andra / ſom ſtår i ſamma tohn: af ett liud dalrar offta ett ſpel / ett trä en luta: af en orgpipa en hel lectare och ſtol / om the ſtå i ſamma ſtemning. Ett glas kan ſprengas af ſitt egit liud.

V. Regeln.

Darringar ſom ſke i lufften / giöra ringlar och Cirklar / och höres på alla ſidor om rörelſens medelpunct: ther icke hela maſſan flyttar ſig.

KAſtar man en ſten i watnet / ſå ſes ringlar omkring. I wädret höres iemwel ropet och liudet på alla ſidor.

VI. Regeln.

Ju gröfre lufft / ju longſammare darring: ju ſmerre-ju ſnabbare.

I watnet twenger ſig ringeln eller darringen longſamt; i lufften fortare; i then finare lufften / ſom kallas æther ännu fortare: I ſolmaterien ifrån ſolen til oſs på ett ögnableck: i thet alrafineſta / lärer ingen tid wara ſom ſwara kan emot wägen.

VII Regeln.

Then ena darringen hindrar intet hen andra.

I watnet pröfwes thet betſt: om 10. eller 20. ringlar giöres / then ene innom then andra / ſå hindrar then ene then andra intet / utan

kan alle fara sin ring ut och gå sin wäg hel orubbade. Likaledes i wädret; then ena strengens liud hindrar intet then andras/ thet ena ordet intet thet andra: Orsaken skal serskilt wisas.

VIII. Regeln.

I alla darringar är stußningz-winckelen lika med infalls-winckelen.

I watnet stöter sig ringelen effter winckelen: Jett rundt kerl med wata falla ringlarna in i medelpuncten igen; i en long reña ga the fram och tilbakars; som en lina i ett grufschacht/ hwilken som ormlenckar rörer sig opp och ned; saṁaledes lärer en streng. Ett gen-liud eller echo stöter sitt liud fram och tilbakars: Jemwäl soimatterna wara syns partiklar.

IX. Regeln.

På darringar kunna gifwas million-tahls ändringar.

Huru monga serskilda liud finnes på ett welstelt clawer/ huru monga felas än innom octaven; huru thet ena klanget skiljer sig ifrån thet andra/ är wellare/ bredare/ dummare/ hårdare: Ja en menniskas liud och utspråk skiljer sig/ som theras ansichten. Hwar sielfliuding eller vocalis har sitt skilda liud/ fast samma tohn med strengen. Fördubblas nu sådana ändringar tilsammans/ så finnes million-tals darringar.

At myket af wårt lefwande wesende består i darringar.

Af följe af the förberörde regler kan wisas huru wårt röreliga wesende/ wår natur/ består i små darringar thet är tremulationer. Af första regeln ser man at en minsta partikel meddelar sin röreise till alla ṁn ka i hela kroppen/ kan föra en hinna/ streng/ blod/ lifandar i saṁa röreise med/ och then sina omrörande

rörande hinnor / Fibrer och nervos. Tahl är ju en darring/ som ett liud är i en streng. Hörßelen är en samling af bemelte darringar / the löpande in igenom neckor / hinnor ; och föra sig fram på hamrar och stån til duram och piam matrem / som likaledes darra : tå alla fibræ, nervi, lifvandar / blod medels sin anröring komma effter föregående reglors art at röras : får hinnan samma darring fatt medels tenders / bufwudz meddarring / så giöres intet ögat mechanik behof. Lucht och smak äro anröringar af partiklar / som runda / kantiga / hwaßa äro / hwaraf fibræ och nervi in til duram och piam matrem ryckas / dras och föras. Synen jemwel / som är wärt ömaste sinne : then minsta ferg och sken giörande anstötning i the gråna fibris, och the stinde nervi optici meddehlande thet Hierhiñan / som giör kenning och darring alt omkring. Likaledes the rörelser som kallas sinnetz / hwilka af ett aggande / bitande / en galla i the inre lemmar härflyta. Alla utwertes kenßler sammaledes / emedan all ting henger så med tråar och senor ehop, at hwad på ett stelle röres / kennes i ett annat / ja i hierhinnan ; thit alla senor och nervi sluta sig / och alt hwad kroppen tilhörer ; samlas : therföre om darringen eller tremulation först thit kommer / så har hon strex rum och emne at sprida sig dela kroppen öfwer. När nu hinnan blir slapp / mistar sin wärma / sitt blod / sina Andar ; blir menniskan dum / trött / död. Ja om the sinnens nervi sleppes ehop / som hela dagen warit utspenda / sker en söm ; tå man likwel har liknelse af syn och hörßel / med mera, som bewis äro / at alla the utwertes Sinnerna äro beholine i inwertes darringar. Hender ock offta at En faller in i ens annans tancka / at thet anar hwad en annan giör och tencker / thet är / at theß Hinna darrar af then andras darring / som then ene strengen af then andras / emedan the äro lika stelte. Tror ock intet wara förmått at sluta / thet osiällga

diurs

diurs tanckar åro tremulationer, hår flytande af kroppens och theß sinnens inre och yttre kenßler; så at erfarenheten them har lårdt / hwad then och then darrings arten betyder / lika som wi kenne orden och meningen igen af hwar sin darringz art.

At ingen ting på kroppen kan warda rördt / som icke meddehlas duræ och piæ Meningi thet år hierhinnan / samt at ingen ting röras kan i bemelte hinna / som icke meddehlt warder hela kroppen / ser man af alla the tråar som fella sig in med senorna vtan om; jemwel af the 20 à 30 nervis som sluta sig wid samma Hinna / hwilken i kläder sig them alla. Blifwer bemelte Hinna stadd / så af hendes enom strax en kenßel / faller bort / swimar / förlorar sin tancka / sitt förstånd. Blifwa fibræ eller nervi slappa / så förgår enom jemwel kenßeln / som i kylningar / blodz-afstengningar / sömn: öfwerflöda lifandarna / som i dryckenskap och hetzighet / hinnan blifwande för warm och stind / så gör hon en mongfellig och will darring i stelle för sin rätta och wahnliga. Hår af följer / at medels så monga anröringar / i oß år ett idelt rörande / darrande / lefwande wesende / så i thet minsta som thet största / i följe af föregående reglor.

Om en boglinia eller curvâ, hwars skårlinier thet år secantes giöra altid med boglinien lika wincklar; af Aff. Em. Svedberg.

Thet år / at skårlinierna AG, AF, AD, Fig: 1. som från medelpuncten A. löpa igenom bogan AD, giöra wincklarna G, F, D, lika / så wel når in til A, som lengre ifrån. Thennes böjning wrider sig mer och mer på ettwis som en inecka / fast altid lengre ifrån sin medelpunct. oprites sålunda.

Geom-

Geometrice: Man giör sig en half-cirkel (Fig:2) med en hop winckellinier eller sinus, nemliga ob. oc. od oe. Ifrån medelpuncten (o) drages Simidiametrar thit / jemwel på andra sidan op. oq. or. os. på sådant sett / at pof. qoe. rod. &c. äro rätwincklar: hwareft nu theße ſtiåra af the andra / ſom vti (p). (q). (r). (f) ther finnes puncterna igen / ſom bemelte boglinie bör dragas igenom och opritas.

Lettare på annat ſett: twenne linier opdrages / (Fig:3) öpningen är efter behag en lagom winckel; giör ſedan twenne twerlinier på ſett ſom (bc) eller (bd) ſynes wara: til ſamma winckel eller i ſamma jemnſidighet / thet är / paralleliſſimo. alla the öfriga op åt / warande / ef, hi, lm, jemwel ee, hh, ll, alt jemnſidiga och paralleler; När nu theße opdragne äro / ſå giör man ån andra linier til ſamma winckel / ſom aB, aC, aD, aS. Tager ſedan med Cirkelen från (a) en wiß punct ſom (e), afſettiande (ae) til (ap): ſedan (ah) til (aq). ſå ock (al) til (r); Hwareft puncterna äro ſom linkens boge bör löpa igenom.

Mechanice. Af Herr Comercie-Rådet Chriſt. Polhem, ſom jemte ſin wida erfarenhet i Mechaniken, har jemwel thet för andra / at bafwa ſig i gruno Geometrien bekant / är mig wiſadt, huru ſamma boglinie opdragas kan på mechaniſkt ſett: nemligen / i medelpuncten (Fig: 4) på en rull ſettes en linial / ſom wridas kan omkring / til efterſyn af (AD): ſedan bindes en trå wid B / ſom går öfwer D til E. Endr nu linialn DA wrides omkring / ſå legger ſig trån om rullen på en ſida / och höjer ſig jemte en ſtyttning på then andra: på enden E, hwar wid ett lod kan hengas / giör en boga eller en ineck-form / hwars ſtiäclinier dragne ifrån E giöra lika wincklar. Af Rullens ſtorlek blifwer bemelte Boglinie minder eller ſtörre efter åſtundan.

Nyttan

Nyttan / will man hafwa Saxar / som i alla öpningar skola klippa lika / så bör then ena knifwen wara rät / then andra böjd sålunda. Är elliest bekant at klippningen i en Sax minskar och ökar sin krafft effter öpningen: Är saxen för myket öpen / neml. öfwer 40de graden / så hasar emellan knifwarna thet som afklippas stål; är hon förlitet / så förlorar hon ock krafften. Therföre om små och stora / öfwerstiårar- och plåt- och andre Saxar så giördes / blefwe klippningen lika öfwer alt. Pappersqwarnar kunde jemwel med sådanna knifwar förbetras: giordes the af metall / och festades på rullar / stenar / eller qwarnstifwor af trä / så måste alt hwad them emellan kommer / i hwad stelle thet är / lika klipt och malit warda.

Slutet af VI. Dehlen.

EMANUEL SWEDENBORG

AS A SCIENTIST

MISCELLANEOUS CONTRIBUTIONS

EDITED BY

ALFRED H. STROH

STOCKHOLM
AFTONBLADETS TRYCKERI
1908

EMANUEL SWEDENBORG AS A GEOLOGIST

BY

A. G. NATHORST

WITH SIX PLATES

STOCKHOLM
AFTONBLADETS TRYCKERI
1908

13-25853

EMANUEL SWEDENBORG AS A GEOLOGIST*

BY *A. G. NATHORST.*

Although geology as an independent science is regarded as having been first founded by WERNER, nevertheless, as is known, there were many investigators long before him, who with interest and success applied themselves to the study of the geological phenomena and also made attempts to interpret the same. In this connection Sweden may be proud of having had among other such pioneers men like SWEDENBORG, LINNAEUS and TORBERN BERGMAN, of whom the last two, as I have shown in another place,[1] exercised a direct influence on WERNER's system. That the contributions of SWEDENBORG and LINNAEUS in the geological field have been less valued than they deserve, is without doubt due to this, that their fame in other fields was so great, that what they produced in geology in comparison therewith seems relatively unimportant and has therefore been much overlooked. Besides this, it may be added that their geological observations and statements are in great part scattered in writings whose contents are mainly of a different kind, for which reason it has not been possible to obtain a complete picture of their activity in the field referred to. And still it may be said without exaggeration, that what they produced in this field is of such importance, that it would have been sufficient to secure for them a respected scientific name.

* Translated by ALFRED H. STROH from the original Swedish in *Geol. Fören. Förhandl.* No. 243. Bd. 28. Häft 5, pp. 357—400, Stockholm, 1906, and now reprinted in revised form, with a few alterations and additions by the author, from the Introduction to Vol. I. of the edition of SWEDENBORG's scientific texts now being published by the Royal Swedish Academy of Sciences at Stockholm: EMANUEL SWEDENBORG, Opera quaedam aut inedita aut obsoleta de rebus naturalibus, nunc edita sub auspiciis Regiae Academiae Scientiarum Suecicae, I., Geologica et Epistolae, praefatus est Gustaf RETZIUS, introductionem adiunxit ALFRED G. NATHORST, edidit ALFRED H. STROH. Holmiae, ex officina Aftonbladet, 1907.

[1] A. G. NATHORST: *Jordens Historia.* Stockholm, 1894; the chapter on »Geological Investigation in Sweden», p. 34 et seqq. Reprinted in *Sveriges Geologi,* p. 1 et seqq. See also A. G. NATHORST: *Carl von Linné såsom Geolog,* in Carl von Linnés betydelse såsom naturforskare och läkare. Skildringar utgifna af Kungl. Vetenskapsakademien. Uppsala och Stockholm, 1907.

In studying Swedenborg's contributions in the field of geology we must admire the many-sidedness and the sharp powers of observation to which they bear witness. Although I have endeavored to confine myself to his purely geological and paleontological contributions, nevertheless hydrographical problems, together with questions of a chemical and physical nature, have also been touched upon, when they have had to do with geological questions. For geology comes into contact with so many different sciences that this could not possibly be avoided.

In giving an account of Swedenborg's contributions in various geological departments, it will be most suitable, in order to obtain a general view, to treat the various questions by themselves, rather than to follow the chronological order of his writings. For he returns to the same subject in so many different places that the chronological sequence in many cases is not suitable for the production of a complete picture of his treatment of one and the same question. A beginning may here be best made with that question in this department with which he first busied himself, and to which he often returns with predilection.

Proofs for a higher water-level in former times.

To begin with it should be remembered that a long dispute had been going on for several hundred years before Swedenborg's time concerning the interpretation of the fossils occurring in the rocks, about which the most fantastic opinions had been expressed. Leonardo da Vinci had already understood their true nature, and the same view was subsequently maintained by Fracastoro (1517), Palissy (1580), Steno (1669), Leibniz (1680), and others. And when it could no longer be denied that the fossils were the remnants of organic forms, there were those who maintained that they were deposited in the places where they are now found during the »universal flood»[1] (Noah's flood, »syndafloden»).

Swedenborg certainly did not doubt that this inundation extended over the whole earth, and it would seem as if in his first work on the subject in question[(1)][2], Om Watnens Högd och Förra Werldens starcka Ebb och Flod. Bewjs utur Swergie. Stockholm, 1719, *(On the Height of Water and the Strong Tides in the Primeval World. Proofs from Sweden)*,[3]

[1] »Flood» here means the same as inundation.

[2] The numbers in small black type refer to the pages in Vol. I. of *Emanuel Swedenborg: Opera quaedam*, etc., Stockholm, 1907.

[3] An English translation of this treatise, as well as of all the other shorter

he still supposed that the testimonies brought forward by him for a higher water-level in former times refer to the same flood. In the dedication to Ulrica Eleonora[3] he indeed only says that he wishes to furnish some new proofs that Sweden in former days had been covered by water and that on account of the abatement of the water it subsequently became larger and larger, even up to the present time of the Queen's reign. In the preface[5], on the other hand, he starts out from the biblical account and takes his point of departure in his treatise with this, that although no one denies that the universal flood has stood over the earth, nevertheless worldly wisdom also wishes to have a word to say in the matter, and therefore she investigates and gathers proofs from the things which the flood has left behind. In but two places in the work itself is the universal flood of the Bible again mentioned, and only two years later he expresses[56] in his letter to Jacob a Melle, which will be mentioned further on, his doubts as to how far all the facts brought forward refer to the above mentioned flood, which indeed, says Swedenborg, lasted but one year.

As concerns the fossils, Swedenborg seems from the very beginning to have clearly understood their real nature, which indeed was at that time almost generally acknowledged. But as an independent geological science was not then in existence, there was not yet any idea about the respective ages of the fossils, and the facts brought forward by Swedenborg, which demonstrate a higher water-level in former times, are in reality in relation to one another of as different ages as they could possibly be, for some come from the silurian, others from the glacial and post-glacial periods.

If from the modern standpoint we attempt to analyse the proofs mentioned by Swedenborg, we find, as is natural, that some of them cannot be regarded as valid, while on the other hand others are still valid. Thus[7], when he wishes to conclude from the position of Kinnekulle between Hunneberg and Billingen that Kinnekulle arose through the deposition of the strata in a calm water between the mountains mentioned, he has certainly failed to see that these were in reality formed at the same time as Kinnekulle and did not exist before it. On the other hand, he is on the right track when he points to the different horizontal strata, of which Kinnekulle consists[8], as proofs that they were deposited in water.

geological contributions by Swedenborg, may be consulted in Part I. of *Scientific and Philosophical Treatises by Emanuel Swedenborg*, edited by Alfred H. Stroh, and published by the Swedenborg Scientific Association, Bryn Athyn, Pennsylvania, 1906—1908.

In order to explain the extension of the »åsar» from north to south[9], to which Eric Benzelius had called his attention, he advances two alternative interpretations. According to the one it is supposed that the »åsar» were thrown up, by the tidal waves, at the time when the sea stood over the whole land, and were thus deposited parallel with them; according to the other interpretation it is supposed that the cause was the winds, continually blowing in an east to west or in the contrary direction, in analogy with the present trade winds.

Although we now know that the »åsar» were not formed in the ocean, yet as late as 1868 they were supposed by A. Erdmann to be raised beaches. The very constitution of the »åsar», in part of sand[11], in part of shingle, together with the rounded and ground form[12] of the stones in the latter case, is further brought forward as a proof of their formation in the water. The mountains of limestone also bear witness, partly by their formation of layer on layer and, partly by the inclusion of animal remains in the stone, »that they [the limestone mountains] were an oceanic mud and a refuse».

Neither was the phenomenon of the erratics unnoticed. In regard to the question of the presence in the »åsar» of rounded stones it is consequently advanced,[13] that stones of widely different kinds, one carried thither from one quarter, another from another quarter, are there met together. Attention is further called to the large erratics which are often found many miles from their original cliffs. Swedenborg supposes that these stones were removed by the help of the water; he first describes the loosening of the stones from the mountains[14], which would be actively advanced if the tides were strong, so that the rocks would at one time lie dry, exposed to the sun's heat, at another time covered by water. Pieces from the rock could in this way have been loosened and afterwards been carried away by the waves. In a special chapter attention is called to the power of water in strong motion to move blocks of stone, especially when the water is salt, (for then the stones lose more of their weight), and when the mass of water in motion is deep.[1] In this manner Swedenborg endeavors to explain[15] why widely extended regions are covered »by large stones rolled on one another», »strewn about like sand», »cast up into heights and hills», and so forth.

Swedenborg also believed that he might bring forward as a proof of

[1] See also the special discussion of this question in Swedenborg's *Expositio Legis Hydrostaticae*, etc. 193

a higher water-level in former times[16] what he called »water-lines» on Hunneberg and Billingen, which are said to be as horizontal as if they had been drawn according to a level, so that if the ocean should rise to this height its surface would follow the border referred to round about the mountain. »Above this line of division there is a greystone mountain [trap] very steep like a wall, underneath a declivity consisting of stones and rocks which are loosened from the mountain. Here one can actually observe the height of the water, where it has for a time remained stationary, and marked the place where its edge was, having also pushed out stones and made the ridge perpendicular». Swedenborg evidently believed that he had noticed what in later times have been called shore-lines, but from the description it is plain that the border-lines between the trap and the underlying sedimentary strata are in question. He himself says this in another place[70]: »there is a horizontal line of division (»divisio») on the lower side, namely, between the greystone [the trap] and the underlying limestones and slates, just as if it had arisen with the help of water along a shore».

From the circumstance that the land and mountains are built up of many different strata[17], as at Helsingborg, in the Vestrogothia mountains, and so forth, it may be concluded that they were deposited in the sea, which is furthermore proved by this, that the water has hidden in these strata »heaps of fishes, snails, and other shell-bearing animals, and, in order to better preserve them against time has petrified them».

Giant-kettles are also brought forward[18] as proofs of the former higher water-level, and their origin is connected with vortical movements in the water when being moved by strong tides, »and if stones have happened to lodge in these whirl-pools they have been carried around and ground against the sides and thus widened the hole more and more». Cases of such giant-kettles at Gullmarsberg and Strömstad are referred to, (several being mentioned, one of them with a large heap of round and polished stones), and there are also cases in Lapland, according to Olof Rudbeck, junior. Three giant-kettles at Trollhättan, many fathoms higher than the present surface of the river, show that the river has cut down deeper in its bed.

A very clear proof of »the former world's tides» are the banks of shells in Bohuslän[19], as at Uddevalla, between Strömstad and Sundsborg, on the islands Orust and Tjörn. Those at Uddevalla are reported as lying 50 fathoms above the sea-level, and the manner in which they are stratified makes it clear, says Swedenborg, that they were gathered by

wind and wave, or by the tides. In another place[31] it is mentioned that banks of shells (»musselsteen») of the same sort may also be found at Addetorp, in the parish of Tunhem.

But not only the banks of shells, but also[20] »other marine animals, swimming creatures and wonderful insects», even fish[?], which are found enclosed in the stone, especially [silurian] limestone and slate, and which are themselves turned into stone, afford proofs of the universal flood, since stone and slate have been nothing else »than mud, sediment, clay and sand». The presence of such organisms is alleged to occur in various places in Vestrogothia (Skarcke parish, stora Dahla, and especially in Billingen), even as many as twelve Swedish miles from the sea. In another place[31] some other localities are also refered to, (Höjentorp, Öglunda church), and it is added that small mussels are also found together with the rest. In discussing these petrifications SWEDENBORG mentions that Professor BROMELL possesses a large collection of them, which he (BROMELL) intended to describe soon.[1]

It is further reported[20] that remnants of the wrecks of ships have been found at some places far inland, and even here is found the report of iron rings in the mountains far from the present shores, which would be useful for fastening vessels. These accounts have as is known survived even to the most recent times, although no investigator has ever been so fortunate as to himself discover such a ring. However, SWEDENBORG draws the conclusion from the evidence brought forward »that Sweden may in former times have been an island or an *Ultima Thule*, as the poets say».

What SWEDENBORG reports[21] concerning the remnants of bones of the whale, which was subsequently called the Swedenborgian whale, is of such great interest that it may be referred to at somewhat greater length. Some years before, (see below), in Vånga parish, two Swedish miles from Skara and twelve miles from the West Coast, there had been »found a skeleton consisting of leg-bones, vertebrae, etc. Had the skull been there the remains might have been taken for those of a Swedish Polyphemus or Cyclops, who once forged the weapons of Vulcan for our Mars, or some other one of the Gothic heroes or warriors». The skeleton was taken to Upsala and there put together, when it was found that it had belonged to a whale, which had gone far inland when the

[1] The allusion is to BROMELL'S »Lithographiæ suecanæ specimen secundum», which was published in 1727.

water stood high, but had to remain when the water decreased. »It is still in the Upsala museum in the care of Professor Doctor Roberg, and serves as a monument to the universal flood and the overflowing of the great ocean over Europe».

From a letter from Dr. JOHAN MORAEUS (subsequently the father-in-law of LINNAEUS) to ERIC BENZELIUS (SWEDENBORG's brother-in-law), dated Brunsbo, (the episcopal residence near Skara), Nov. 21, 1705, which letter is referred to by LILLJEBORG, it appears that the find was made shortly before, for at that time all of the bones were not yet dug up. According to CARL AURIVILLIUS[1], the place where the find was made lies about 132 kilometers from the coast and 100 meters above the sea[2]. MORAEUS says in his letter that the bones would be taken to the Skara cathedral. Whether this occurred is uncertain.

In any event it appears that it was due to SWEDENBORG that the bones were taken to Upsala, for in a letter[201] from him to BENZELIUS, dated Brunsbo, March 6, 1710, we read: »Four or five weeks ago the bones of a giant were sent from here; I suppose they have arrived, which I also desire, because I alluded to them in some verses, which Magister Unge will perhaps introduce into his dissertation; they are as follows:

Sunt Gothia nuper spatiosa membra gigantis
Arecta, ast cerebro, ast ingenioque carent.
Fertilis haec tellus alium nunc mittit alumnum.
Viribus ingenii hic, corporis ille, valet.[3]

»For this reason I wish that the bones may not be delayed on the way; the novitiate who took them with him seemed to be well disposed.»

[1] CARL AURIVILLIUS: Der Wal Svedenborg's (Balaena Swedenborgii Lilljeborg) nach einem Funde im Diluvium Schwedens beurtheilt. K. Svenska Vetensk. Akad. Handlingar Bd. 23, No. 1. Stockholm, 1888.

[2] Cf. H. MUNTHE's more complete account in the contribution »Om faunan i Vestgötaslättens yoldialera». Geol. Fören. Förhandl. **23** (1901): 120, from which it is clear that the height, determined more exactly, is 97 m. The place where the find was made is also mentioned and illustrated by the same author in the description for the chart »Falköping». S. G. U., Ser. Aa, No. 120, 1906.

[3] In a free translation, as given in R. L. Tafel's »Documents concerning Swedenborg», London, 1875—1877:

From Gothia came a giant's bulky frame;
But brains and quickening intellect it lacked.
This fertile land a new alumnus sends;
In mind gigantic this, as huge in body that.

From this letter and from the verses[1] it is clear that Swedenborg then really believed that the bones came from a giant, and it is therefore unlikely, as Carl Aurivillius supposes, that it was Swedenborg who first understood that a whale was in question, but the merit of doing this is apparently due to Lars Roberg, Professor of Anatomy and Practical Medicine at Upsala. Indeed it is clear from Swedenborg's own statement that it was from a closer examination of the bones after their removal to Upsala that their real nature became evident.

Sven Nilsson appears to have understood long ago, (Skandinav. Fauna 1847), that a species of whale different from the Greenland whale was in question. In 1862 Lilljeborg called it »the Swedenborgian whale», and subsequently gave it the name *Hunterius Swedenborgii*. Carl Aurivillius, who in 1888 (l. c.) described a more complete skeleton of the same species, found the year before in the glacial clay in the parish of Tvåaker, Halland, about 5.5 km. from the coast and 15 m. above the sea, refers it to the genus *Balaena*, and endeavors to show that it was identical with or nearly related to the »south-ice-fish», living at Spitzbergen in the beginning of the eighteenth century, so named to distinguish it from the real Greenland whale, the »west-ice-fish».

Furthermore[21], when Swedenborg explains the inland seas with their fishes as relics from the former covering of water, the series of thought is of quite the same kind as that which in later times led to the explanation of the relict fauna in our great seas. He emphasizes the statement that even at Hunneberg and Billingen there are found fishes in the lakes »which are all of the same kind as those found in the sea itself», and he does not understand how the fishes could have gone thither if they were not left behind by the sea. It is however evident that Swedenborg here had in mind the fishes which are found in the Baltic, for naturally no identity with the fish fauna of the North Sea can have been in question.

It is further advanced[23] that the streams in the valleys have cut down deeper in the degree that the water has decreased, wherefore dried up or deeply cut streams in valleys furnish proofs of the higher position of the water in former times. Why he supposed that the black soil was a proof of the same has not become clear to me; he here supports himself by Olof Rudbeck, Senior. The uneven topographical configuration

[1] The verses by Swedenborg, it may be added, were published by Unge in his dissertation: *Dissertatio theologica de Consummatione Mundi* ... Sub. Praesidio Dn. Johannis Palmroot ... submittit Andreas Unge ... 2 Apr. 1710. Upsaliae, 1710.

in our county is advanced[24] as a testimony pointing in the same direction, by which SWEDENBORG appears to mean that the water worked partly as an eroding force, as well as an accumulating force, forming banks of sand and gravel in other places.[1] Finally, the annual descent of the Baltic is advanced as a testimony that the sea-level was formerly higher than now. It is here advanced that this descent takes place so rapidly that where there were formerly good fishing places fields and meadows are now found; that the towns in Lapland had to be moved down; that the harbors and passage-ways for ships used in former times have had to be reestablished; that former staple-cities now lie far inland, even as far as 7 Swedish miles, (Upsala being referred to by way of example). According to BERZELIUS[2] SWEDENBORG was the first to call attention in a printed work to the decrease of the water in the Baltic (»the rising of the Scandinavian coast»), but in this respect, as no doubt in various other matters, he had a predecessor in URBAN HJÄRNE.

In a chapter on the change of the northern horizon[25] SWEDENBORG expresses the view that if the seas of the world rise towards the south, or at least sink there less than in the northern tracts, the earth's form would be changed, in that it would become flatter at the poles and rounder at the equator, so that if the earth's horizon was formerly of

[1] In the introduction to his great work on Copper SWEDENBORG also expresses himself concerning the flood, as Mr. STROH has pointed out to me. The uneveness of the earth's surface is ascribed to the flood. Says SWEDENBORG: »We incline to think, indeed it cannot be questioned, that our planet was perfect in beauty, delicious in variety, and like one vast paradise, before the flood; its surface unbroken and even, with no precipitous mountains or rugged rocks, no deep vallies, no lakes, and no seas: but that after the flood this order was reversed; that it changed its estate, and its surface became broken and uneven, from its outer crust being rent asunder by the waters.» (*The Principia*, by EMANUEL SWEDENBORG, transl. by CLISSOLD, Vol. II., London, 1846. See page 378).

As to the manner in which this took place, according to SWEDENBORG's view, the original may be consulted. Here it need only be mentioned that he supposed the mile-thick earth's crust to have rested upon the water, a supposition which is also found, at least in part, in the writings of URBAN HJÄRNE, ATHANASIUS KIRCHER, J. J. BECKER, and others. Perhaps the biblical account of the flood, that »then were all the fountains of the great deep broken up», was not without influence upon SWEDENBORG's conception. This transformation was also, according to SWEDENBORG's view, of importance for the origin of mineral deposits, concerning which he who is interested will find detailed information in the original.

[2] J. BERZELIUS: Några ord om den skandinaviska vallens höjning öfver ytan af omkringliggande haf och om afslipningen och refflingen af dess berg. Förhandl. vid de skandinav. naturforskarnes tredje möte i Stockholm den 13—19 juli 1842.

an oval shape it would now become more and more round. On account of the consequent change of the meridians the size of a degree in our tracts would be diminished, so that where it formerly was for example 10 Swedish miles it would now perhaps be little more than 9. The cause might lie in this, that the earth formerly rotated more rapidly than now, which would also bring with it a shorter time for the revolution of the moon. This would result in a higher level of the water at the poles, for if there were only 2 or 3 hours between the tidal waves, instead of 6, the water would not be able to return to its normal niveau before it would be influenced anew by the moon's attraction. In this manner the sea at the poles would have been kept higher, but would subsequently, in the degree that the motion of the earth and moon decreased, gradually fall, which is proved by the descent of the water in the Baltic and by what is reported of its ascent in more southern tracts.

Now, if Sweden was formerly covered by water, which subsequently decreased, the highest parts have formed an island[26], as was supposed by Rudbeck, Senior, and the geographers of former times. By means of leveling one may determine which part of the land is the highest, and which therefore formerly, when the water stood higher, must have been an island. In this connection Swedenborg remarks that it would be of interest to learn what the height of the Baltic is in relation to the sea at the West Coast.

That the tides must have been stronger when the water completely covered the land is evident[27]. Afterwards there was here formed first an archipelago of larger and smaller islands, then, in the degree that the mainland was increased, the tidal phenomenon could no longer make itself valid in the same degree as before. The concluding words of the work under consideration must be reproduced *verbatim:*

»From the reasons advanced it may doubtlessly be concluded that our earth has had a high sea and a flood over itself; that the tops of our highest mountains and hills were under its level and have increased and as it were built themselves up under the water. It may also be concluded from the proofs that the sea rose especially above our North, where it had its highest level and as it were caused the greater rotundity of the earth, which was to be seen in a higher degree then than now; and that Neptune, with all his Sea-godesses and Nymphs, as it were enjoyed remaining here as long as possible, and then gradually departed and left his abyss for us to live and build on, thus enlarging the land of Svea up to the time of the present government.»

As is manifest from this presentation, SWEDENBORG supposes that the descent of the water took place little by little and gradually, although he still appears to connect the higher water-level with the universal flood. But not long after this work he expressed himself very clearly against the view that all the testimonies advanced to show a higher water-level in former times are connected with the universal flood. This occurred in his letter to JACOB A MELLE[34], dated Stockholm, May 21, 1721, which was directly occasioned by A MELLE's work on petrifications (figured stones) in the environs of Lübeck[1], in which SWEDENBORG's work *On the Height of Water, etc.* is cited. By way of introduction it is advanced in the letter that petrifications occur in various parts of Sweden, as also that collections of such petrifications have been made by the Provincial Physician JOHAN HESSELIUS, the Assessor Dr. MAGNUS VON BROMELL (who has also had them engraved on copper)[2], and also by the Professor of Medicine L. ROBERG in Upsala. SWEDENBORG then passes over to the proofs, which, according to his view, are at hand to show that the land was formerly covered by the ocean (the same proofs which were advanced in his treatise). But here there is appended the weighty addition, that not all the facts advanced could relate to Noah's flood, which indeed lasted only one year. Especially is this valid concerning the changes which have taken place since Sweden was settled, etc. »These circumstances indicate that not all the events under consideration took place during the universal flood, but that the earth and especially its northern tracts were for a long time afterwards covered by a deep sea, out of which they little by little arose in the degree that the water in the northern tracts decreased, or in other words the foundations became inhabitable».

It may here be observed that a summary, similar to the one in the letter to JACOB A MELLE, although in some points more extended, was also presented in the first chapter of the »Prodromus Principiorum»[3], published in the autumn of the same year (1721). In it strata of salt or whole mountains of salt are explained as having been deposited on the bottom of the sea at the time when the ocean covered the earth. In this work also it is expressly stated that not all of the testimonies

[1] De lapidibus figuratis agri litorisque lubecensis. Lubecae 1720.

[2] The illustrations for BROMELL's »Lithographiae suecanae specimen secundum», published subsequently (1727), are here referred to.

[3] The complete titles of the works by SWEDENBORG here cited are given at pages 40—41.

advanced to show the higher water-level of the ocean in former times can be referred to the universal flood.

The first chapter (Observata circa montium diversitatem in Suecia, et disquisitio de illorum origine) in SWEDENBORG's »Miscellanea observata circa res naturales» taken as a whole contains[63] the same views, as concerns the mountains, (although here the strata of the mountains in Ostrogothia and in Gothland are also mentioned), and erratics are referred to in the treatise *On the Height of Water, etc.* The position, nature and characteristics of the mountains are regarded as being results of the universal flood. The presence of the great erratics, like fragments of mountains, even in regions where no mountains exist, indeed on the tops of other mountains, is especially emphasized. That the erratics, according to SWEDENBORG's view, are especially found at places situated very high above the sea, as in the tract of Örebro, he considers to depend upon this, that the water there was not so deep and therefore did not possess the power to move the blocks further. Another chapter (Observatio circa subsidentiam marium versus Septentrionem) in this work (*Miscellanea Observata*) also contains[84] a summary of what was advanced concerning the subject in question in the treatise *On the Height of Water*. It is here reported that hooks and other objects for fastening vessels have been found especially in Upland, and it is here further emphasized that not all the changes in the earth's crust have been caused by the universal flood, but that some have been occasioned by this, that the sea was formerly considerably[1] higher than now, and at that time certain layers with the petrifications enclosed in them were formed, while on the other hand others are derived from the universal flood. It is also expressly stated here that the surface of the Baltic is higher than that of the North Sea, as shown by the fact that the descent of the streams which flow to the North Sea from the highly situated region at Örebro is by calculation found to be greater than for those which flow to the Baltic.[2] Therefore the latter's diminished height as observed in the

[1] In reality it should have been said that the shore-lines were formerly several miles farther inland than now, because this is evidently SWEDENBORG's view. He says: »Non omnes mutationes in terrae crusta a diluvio universali ortum suum duxisse, sed etiam a mari supra horizontem hodiernum multis parasangis olim exstanti», etc. A parasang or ancient Persian mile corresponds to 30 stadia or 4.5 kilometers. Of course SWEDENBORG could not have meant that the difference in the sea-level's vertical height was many parasangs.

[2] As a matter of fact actual measurements had not been made, but SWEDENBORG says that the descent to the North Sea would be about 70 ells.

north may depend upon its outflow into the North Sea, a view which later on is repeated by NORDENANCKAR.

The proofs of a higher water-level in former times advanced by SWEDENBORG which have been reviewed above are all taken from Sweden, except what he says concerning the formation of strata of salt. But in the »Miscellanea Observata» he devotes a couple of chapters to the conditions on the continent, which in his opinion furnish testimonies pointing in the same direction.

One of these (Observatio de vegetabilibus petrificatis Leodii[67]) treats of the presence of plant-fossils in a mountain near the cloister Chartreux near Liège in Belgium. SWEDENBORG considers that the constitution of the strata and the fossils enclosed in them demonstrate that the ocean formerly stood at least a hundred ells (60 m.) above the present sea-level, and so he supposes that the land with its plants was laid waste, the plants being imbedded in the sand and clay. I shall further on return to the plant-fossils, which belong to the coal measures, and of which figures are given in this connection. The second chapter, which is referred to above, (Observatio de stratis ex conchilibus Aquisgrani[68]), treats of the fossiliferous strata at Lousberg near Aix-la-Chapelle, which according to SWEDENBORG's estimation is situated hardly a hundred ells (60 m.) above the sea-level. In giving an account of the mountain he says that more than ten of its various strata are formed by the shells of molluscs, heaped up in such quantities that whole wagon loads of them might be gathered. From the constitution of the strata and fossils he draws the conclusion that they have undergone some change by the influence of water and heat since they were deposited. In passing he refers to the banks of shells in Bohuslän as a formation similar to these fossiliferous strata, and on account of the presence of the fossils he comes to the conclusion that the ocean at Aix-la-Chapelle formerly stood at about the height of a hundred ells (60 m.). SWEDENBORG gives figures of some fossils collected at Lousberg, which, as we now know, belong to the cretaceous formation. I shall return to these also further on.

The trap in the mountains of Vestrogothia.

As early as 1719, in his treatise *On the Height of Water, etc.*, in a special chapter, (On the strata of greystone on top of limestone[18]), SWEDENBORG expresses the opinion that the »greystone» which covers the limestone at both Kinnekulle and Billingen, in which »fishes and insects are concealed», must also have been deposited in the sea as »a fine

sediment and mud . . . although in it there are never any animals to be found, as in other strata». At this time, when there was no knowledge of volcanic mass eruption, the conclusion was quite natural; it is indeed the same conception which was long after accepted by the school of WERNER in connection with basalt.

SWEDENBORG returns to the same subject in the »Miscellanea observata», where a special chapter[70] (Observata circa strata duriora, constantia Saxo communi Griseo; deque illorum origine) is also devoted to the question. He expresses his astonishment that greystone[1] in many places is found in stratified kinds of rock, although it usually builds up mountain chains, as in the Alps and many of the mountains in the North, which are generally considered as being synchronous with the earth itself. But that the greystone which is here in question — the trap in the mountains of Vestrogothia — was once soft and like clay, SWEDENBORG considers, as mentioned above, to be demonstrated by this, that in Billingen, Mösseberg, Hunneberg and Kinnekulle this greystone lies above the fossiliferous strata of limestone and slate, and he remarks that he has seen the same kind of rock between the strata of clay and slate at Liège and other places. In passing it may be remarked that SWEDENBORG held that the perpendicular walls of the mountains are connected with the cuboidal (columnar) splitting of the trap.

It was apparently not overlooked by SWEDENBORG that no petrifications were to be found in the trap; on the contrary he endeavored to demonstrate by experiment what occasioned this. He considered the trap to be formed of an especially fine sediment, which was for a long time loose and flowing, on which account the harder objects sank through it, while the lighter ones (plants, etc.) floated up to the surface, and animals were able to escape from it before it hardened. The demonstration is indeed not successful, but our interest attaches itself to the fact that SWEDENBORG saw the necessity of trying to explain why the petrifi-

[1] It ought to be pointed out for foreign geologists that in Sweden »grårsten» (greystone) does not mean granite alone, but in general a hard crystalline kind of rock, in a sense opposite to the sedimentary rocks, like sandstone, chalk, slate, etc. It is therefore incorrect to translate »saxum griseum» by granite, as has been done in a number of foreign works. C. E. STRUTT, in translating the »Miscellanea observata» into English (Miscellaneous observations connected with the physical sciences. London, 1847) himself used »granite» in translating, but in the Introduction (p. XIV) correctly emphasized that »the *saxum griseum* of our author . . . may generally be considered as representing the various rocks from the granitic to the trapean formations».

cations were missing in the trap, although it was supposed to have been deposited at the bottom of the sea.

On the falling and rising of Lake Venner.

SWEDENBORG's manuscript[33] on Lake Venner[1] has, as is known, been made the subject of a critical examination by Professor R. SIEGER of Vienna (now in Graz) to whose more extended account those who are interested are referred[2]. The matter to be explained was the fact that Lake Venner from time to time rises (or falls) even as much as 0.6—1.8 m. above (or below) its usual niveau. SWEDENBORG calculated at Rånnum's Bridge the quantity of water which leaves the Lake through Göta Elf, and in doing this he came to the conclusion, that the quantity was so inconsiderable in comparison with that of the Lake itself, that if the outlet were closed up for a whole year, the rising of Lake Venner caused by it would amount to only 0.15 m. If on the other hand the inflow were supposed to be shut off for the same length of time, the sinking of the Lake's surface would not pass beyond the same point, for according

[1] Om Wennerns fallande och stigande och huru wida thet härröra kan af wattnets tillopp eller aflopp igenom strömmar.

[2] R. SIEGER: Eine hydrographische Studie Swedenborg's. Nachrichten über Geophysik. Bd. I. Wien, 1894. SIEGER, who had access to a photolithographic facsimile of the original manuscript by SWEDENBORG which is preserved in Linköping, has not indeed been able to decipher every word and has therefore made one or two mistakes, but these are of subsidiary significance and have little influence on his work as a whole. I shall here point out that which has caused him the greatest trouble. SWEDENBORG, in the first section of his paper, gives as an example of the changes in the height of the water the following: »Strandbonden theromkring wet at berätta, huru han ibland förlorar sin åker och eng; ibland får han stora ypna *tracter*, i thet at jordmohnen sluttar longsamt», etc. (»The farmer near the shore at that place relates that he has sometimes lost his arable lands and meadows; sometimes he receives large open tracts, because the surface of the ground slopes gradually», etc.) SIEGER here read: »ibland får han stora yxan», and although he thought that the indistinct word following »yxan» really was »tracter», he believed that for the sake of the connection it should be interpreted as being »kasta», that is, the meaning should be: »sometimes he may throw the great axe», (»ibland får han stora yxan kasta»), which would mean that the farmer at the shore might sometimes win as much land as corresponded to the throw of an axe. The erroneous interpretation therefore followed from this, that SIEGER read »axe» (»yxa») instead of »open» (»ypna»).

In the first portion of § 6 SIEGER has read »vanliga» (»usual») instead of »longliga» (»long») and therefore translated it with »gewöhnlich», and in the last portion of page 123 of the facsimile of the same section he has read »snart» (»soon») instead of »swårt» (»difficult»).

to SWEDENBORG's supposition the quantities of inflowing and outflowing water would correspond to each other. But since Lake Venner during only a few weeks can rise even as much as 0.89 m. SWEDENBORG supposed that this could not be connected with the inflow or outflow, but must be due to other reasons, and this the more, since other great lakes, like Vetter and Bodensjö, were reported as acting in the same way. He wished to find the reason in a deformation of the Lake's surface, which he considered to be higher at the centre than at the shores. When this difference is equalized, the water is so to speak driven towards the shores, which presents the appearance of a rising of the whole surface of the Lake. The falling would depend upon a movement of the water in the opposite direction.

SWEDENBORG's calculations, however, as SIEGER has shown, do not bear examination. It was of course insufficient to calculate the quantity of water in the outflow at only one single period of the year, and as the calculation seems besides to have been made at a very low water-level, the result was altogether too low. On the other hand SWEDENBORG estimated the area of Lake Venner as being from 6 to 7 times greater than it actually is, as being 36558 square kilometers instead of 5568.4. Both of these sources of error strengthened one another. Besides, SWEDENBORG overlooked such weighty factors as rain and snow, and also evaporation on the Lake's own surface as well as within the region of its inflow. But his demonstration is, as SIEGER emphasizes, strictly logical, in spite of the error in the premises. »Da sich keine andere Erklärung festhalten lässt, lag dem Mechaniker, dessen Geist gerade damals mit grossen Veränderungen des Meeresniveaus erfüllt war, die Annahme von Deformationen nahe; seine Beobachtungen aber schlossen es aus, sich diese, ähnlich wie er es am Meere annahm, als Hin- und Hergehen des Seespiegels zwischen entgegengesetzten Ufern aufzufassen. So bleibt nur eine Deformation zwischen Centrum und Ufern übrig—eine wahrhaft kühne Idee, in der SWEDENBORG den modernen Theorien von der 'Continental-woge' nahe kommt».

But if for this reason SWEDENBORG did not find the right solution of the problem, another Swede, as SIEGER points out, very soon saw the connection between the water-level of the lakes and the quantity of rain and snow. »BIRGER VASSENIUS sammelte Daten über Wasserstand und Witterung und erkannte bald deren Zusammenhang. Zunächst in den 20:er Jahren des vorigen[1] Jahrhundertes leiteten ihn theoretische Gründe —

[1] This was written in 1894.

auch er konnte der Rücksichtsnahme auf die chemische Zusammensetzung nicht genug entziehen — dazu, der Verdunstung allein die entscheidende Rolle zuzuschreiben; allein fortgesetzte Beobachtung am Wenersee klärte ihn über das Zusammenwirkung beider Factoren auf und seine kleine Schrift von 1758 (Swenska Mercurius, III, 406 ff.) enthält im wesentlichen dieselbe Lösung, die dem Problem heute zu teil wird. Auch zu diesem raschen Fortschritte der Erkenntnis hat SWEDENBORG's Vorarbeit ihren Teil beigetragen, in dem sie die Argumente und Beobachtungen sichten und ordnen half».

SWEDENBORG's views concerning Lake Venner are briefly reported[49] in the *Acta Literaria Sveciae* for 1720, pp. 111—116, in connection with a number of reports concerning other Lakes, expecially Vetter. But these reports were received from the hands of others, and they refer among other things to a supposed connection between the rising and falling of adjacent lakes (Le in Dalsland, etc.). Most attention however is paid to Vetter, concerning which DANIEL TISELIUS furnished information. As it is the same as that which TISELIUS later on himself published in his work on Vetter[1] there is no occasion for dilating upon it here.

Observations concerning the strata of mountains.

In the chapter »Observata circa strata inclinantia et de causis obliquationis illorum» it is held[72] that while some strata are horizontal others may be inclined or even have a perpendicular position, or be bent — in part convex [anticlinal], in part concave [synclinal] — or elliptical or parabolical. Even folded strata are described, although the expression is not employed. SWEDENBORG also seems to have noticed discordance, for he says that at Marburg and other places he has found the uppermost strata to be horizontal, while the lower ones were more or less inclined. Under the castle Blankenstein between Dillenburg and Marburg he noticed that the strata are bent four or five times up and down, and at Cassel he saw a formation bent circularly[2].

[1] DANIEL TISELIUS: Uthförlig beskrifning öfwer den stora Swea och Götha Siön Wätter. Upsala, 1723.

[2] In order to ascertain which layers SWEDENBORG possibly had in mind by the examples adduced from Marburg, Blankenstein and Cassel, I consulted Professor Dr. E. KAYSER of Marburg, who kindly gave me the following information. By the horizontal strata, which at Marburg lie above the inclined strata, SWEDENBORG undoubtedly meant the red, conglomerate-like strata of the uppermost »Zechstein» which there cover the folded carboniferous and devonian strata of the Rhine-schists. Blankenstein

By an experiment with a mixture of clay in water, which was permitted to settle upon an uneven bottom in a vessel, SWEDENBORG came to the conclusion that the deviations of the strata from the horizontal position are related, at least to a great extent, to an uneven bottom and the settling occasioned by it. The influence of side pressure was not understood in those times.

In a subsequent chapter »De causis varietatum in stratis» the varying hardness, color, weathering, impregnation by various substances, of the strata, and their later metamorphoses, which took place after the universal flood, etc., are pointed out.[73] His explanation of how this could take place by the penetration of water and other fluids through the strata, especially along the edges of the layers, is of interest and in many cases valid even today.

Not less interesting is the chapter »Observata et observanda circa strata, illorumque separationem, ordinem et diversitatem».[74] SWEDENBORG here shows by experiment how stratification could arise by the deposition of sediment at successive times, possibly in some cases in connection with temporary drying up. He points out that the heavier (respectively larger) particles sink to the bottom first, but if a fine sediment has already been deposited and attained a certain degree of solidity, the heavier particles remain lying upon the sediment, or in other words under varying conditions the order of the various strata will vary. In this connection he gives on the one hand an account of the strata at Helsingborg, and on the other hand of those at Billingen. Since all the kinds of rock occur as strata, even the hardest greystone [trap], it may be concluded that they were all originally deposited on the bottom of the sea. Metallic veins however are exceptions to this, although some strata may also contain ores.

Interstrata also deserve to be carefully investigated, and SWEDENBORG gives an account of their constitution. »Nearly every change which is noticed in the strata is caused by the penetration and infiltration into the interstices of vapors, gases, water». Finally, the various objects imbedded in the strata, such as plants, shells, other animals, etc., are also

is an old ruin of a castle built on diabase (devonian lava stream), which rests upon a middle devonian schist, the stratification of which is almost horizontal, although it exhibits a transverse lamination. Probably SWEDENBORG has taken this lamination to be the actual stratification. The examples from Cassel mentioned above presumably refer to the pronounced folds in the so-called »Weinberge» and their relation to the horizontal »Röth»-strata (the upper portion of the Bunter-sandstein).

worthy of a close examination, and SWEDENBORG refers to the various changes which they may have undergone.

The three chapters, of which a very short account has here been given, demonstrate that SWEDENBORG with special exactitude and care, and with sharp powers of observation, studied the occurrence of the various kinds of rocks in nature, and that he collected a rich experience not only from Sweden but also from other countries. But the influence of belief in the universal flood is naturally exhibited here also.

Chemico-geological questions.

The chapter »Observata circa margam saxatilem, vulgo Margelstein dictam»[77] gives an account of the characteristics of the kind of rock which the Germans called »Mergelstein»[1], a limestone containing clay.

»Observata de crustis circularibus in quibusdam saxis, deque nucleis montanis».[78] In a mountain in the neighborhood of the cloister Chartreux at Liège there is found a stratum of sandstone an ell thick, which is split up into parallelopipeds. When these pieces were broken up there appeared inside of them concentric rings of various colors, and this in such manner, that in cubic pieces the rings were circular, in oblong pieces elliptical, while in more irregular pieces they deviated somewhat from the circular form. (See the figures, in Plate III). The outer surface was brown, the outermost ring a lighter brown, after which followed green rings and inmostly rings of a yellow color. The inside of a piece might be hollow, either empty or filled with iron ochre, or the hollow might contain a hard kernel, etc., concerning which those interested are referred to SWEDENBORG's own extended account. From this it appears to be clear that an iron-holding sandstone was in question, which on weathering gave rise to the phenomenon just mentioned, although of course a fuller description of its constitution cannot be given without inspection. From the manner in which the concentric rings were arranged SWEDENBORG drew the conclusion that when water or some solution enters through the sides of a porous cube it will finally proceed with a circular (spherical) edge, in an oblong parallelopiped with an elliptical edge, etc. In the second Part of the »Miscellanea Observata» he returns to this in a special chapter[99] (Observata de influxu liquidorum ut aquae et ignis in corpora dura) and even endeavors to furnish a formula for the penetra-

[1] Mergelstein, according to F. A. REUSS (Neues mineralogisches Wörterbuch. Hof 1798), = »verhärteter Mergel».

tion of the water, which however falls outside the province of our more particularly geological discussion.

In the chapter »Observata circa emollificationes duriorum et de origine aetitarum, belemnitarum, etc.»[96] mention is also made of the sandstone at Liège referred to above, and a multitude of examples is also given of how some kinds of rock have become soft, that is, undergone chemical weathering. For the special cases the original may be consulted.

From the chapter »Observatio circa stallactitas et chrystallisationes ex lapidibus oriundas, et circa similitudinem earundem cum aqua congelata»[174] it is evident that SWEDENBORG had a thoroughly correct conception of the outer conditions necessary to the formation of stalactites. With reference to the conditions in Baumann's cave the formation of the stalactites from the dripping water is pointed out, although naturally the chemico-physical process could not be explained in those times. SWEDENBORG makes a preliminary comparison between the stalactites and the icicles which hang down from the roof of a house. He endeavors to further demonstrate that there are similarities not only between ice and stalactites or minerals of the spar-group, which break up into cubes with square sides[1], but also between ice and quartz, which break up with triangular surfaces, forming pyramids, prisms or forms with parallelogrammic surfaces. That these have also been formed from aqueous solutions is evident from the manner in which they arise. But here there appears to be the difference that spar is derived from the water which trickles through cracks, while quartz has its origin from the very pores and hard mass of the rock.

The chapter »Observata de succo petrificante; quod non idem sit cum aqua quae stallactiten creet»[177] stands in the closest connection with the preceding. After SWEDENBORG has given an account of the characteristics of the water which forms the stalactites in Baumann's cave he points out that the bones of animals, (vertebrae, limb-bones, teeth, etc.),

---

[1]) The original here[176] reads as follows: »3. Quodque particulae hujus secundi generis lapidis [quartz, etc.] diversum plane situm trahere videantur, scilicet talem qui pentagona, sexagona sive alias formas angulares inducat, quod videre est in chrystallisationum varietate. 4. Unde distinguitur hoc secundum genus a priori in eo, quod hoc triangulariter, et in pyramidales, prismaticas et parallelogrammi formas, alterum vero cubice et in plana quadrata frangatur; et vulgo appellari solet illud Quartzium, hoc genus vero Spathum». Since in other places it is also repeated that spar splits into cubes, it seems to be evident that even then SWEDENBORG had noticed the cleavage forms of calcium spar.

which are found in great quantities in these caves as well as in the caves at Schartzfeld, are not petrified, indeed are not even imbedded in the stalactites. There is also a kind of earth in these caves, which, although surrounded by stalactite, has not passed into stone. From this SWEDENBORG draws the conclusion that the water which gives rise to stalactites is not of that kind which occasions petrification, and that indeed it is known — here Carlsbad is probably referred to — that some kinds of water have the power of encrusting, but not of actually petrifying organic objects, such as branches, leaves, herbs and mosses. SWEDENBORG therefore supposes that petrification is caused by the same liquid which gives rise to quartz, etc., [that is, water containing silicic acid]. This is in many cases correct, but on the other hand carbonate of lime is a no less important means of petrification, and SWEDENBORG himself mentions in another place[90] that he at Aix-la-Chapelle saw shell-containing strata which had been converted into limestone.

The following chapter: »Observata circa origines lapidum, vulgo quarts et spathum dictorum, et rationes probabiles, quod ortum suum habuerint post tempora diluviana»,[180] also stands in close connection with the two preceding chapters. Spar and quartz are especially important kinds of stone, since they build the lodes in which veins of metal are usually found. Cracks and cavities in mountains are most often filled by them, and when strata in the mountains have been broken up, they cement the pieces together again, everything pointing in the direction that the cavities were previously filled by some solution from which the minerals in question were crystallized. Even between the surfaces of the layers we see veins of the same minerals, and in mines they fill up places which would otherwise show themselves as clefts or holes. In caves of stalactites we see the process still going on; if they were completely filled up, the stalactites, which appear to be the same as spar, would form a mass resembling the lodes in mines. We also see how small cavities are filled by crystals, and since all this is proceeding even today, there is foundation for the belief, although it cannot be fully demonstrated, that the mineral in question was formed after the universal flood. The copper mine Kupperos in Lauterberg is given as an example where a lode resembling stalactite widens and contracts itself, the mineral vein being in the middle, as would be the case if Baumann's cave were filled up, that is, this cave furnishes an example of an unfinished and progressing stage in the formation, while Lauterberg is in the completed stage.

On the formation of mineral veins.

The remarkable chapter here referred to: »Rationes quod effluvia vel particulae minerales influant in matrices suas et illas impraegnent metallo, mediante aqua»,[166] contains an especially interesting and complete presentation of SWEDENBORG's views regarding the formation of mineral veins and ores, which he considers as having been caused by deposits from solutions which had penetrated into the mountain cracks. To give an account of this would itself demand a lengthy treatment, wherefore he who is interested is referred to the original. The presentation, still readable today, bears witness to SWEDENBORG's thorough and comprehensive observations in widely separated places in Europe and must be considered as being especially excellent for the times in which it was written.

Warm springs.

This subject is treated in the chapter: »Observata cum experimentis de thermarum origine, calore et sale».[85] SWEDENBORG first shows how water, aside from gravity, can [on account of capillarity] pass up through fine chinks (*»Nullibi melius surgere posse aquam supra horizontem sui, tanquam sponte, quam intra strata sive lamellas exiles lapidum»*). In this way the water of the springs is derived. In addition proofs are given that fire may continue or heat be preserved for centuries if the access of air be diminished. That a subterranean fire exists is certain, but it is confined to certain portions of the earth's crust. The presence of fire is demonstrated by volcanoes, by mountains which send forth hot vapors, and by warm springs. These are derived from the water, which, rising in the fissures, and of course being warmed by passing the hot strata, issues at the surface of the earth as a warm spring.

In connection with this presentation an account is given of a number of experiments with water from the spring at Borcet near Aix-la-Chapelle, and of the conclusions formed thence concerning the composition of the water.

On the interior of the earth.

In the chapter »Observata circa opinionem de igne centrali»[143] SWEDENBORG expresses himself in opposition to the opinion then prevailing that the earth was hollow and its centre filled with fire. He thinks that

on the contrary it is quite solid and that the volcanoes, warm springs, etc., can be much better explained by the supposition that certain parts of the earth's crust are hot or glowing.

On miscellaneous geological observations and views.

SWEDENBORG mentions[31] that in Billingen, near Öglunda church, there is found slate which might be used for slates, tables and the like. At one place where two powerful springs flow from two beautiful ravines there is a slate which is »hard like Swiss slate, which could be taken away in any size desired and afterwards polished for whatever use it might be needed... Just beside this place there is also a stream which flows from the highest peak of Billingen with great force, and many mills are driven by it year in and year out. At this place a mill might easily be established for polishing stones by means of the water».[1]

In a manuscript »Om åtskillig slags Jordmohner och Gyttior» it is mentioned that in Rhyda parish in Vestrogothia there are three springs, a short distance from the rectory, one with pure water, the second with a small and the third with a great percentage of mineral water. Down below the last named is a deposit of ochre, still lower down a swamp, in which the mud (ochre) deposits itself at the bottom and becomes coal black. The thickness of the mud is 1—4 »quarters» (15—60 cm.); and it rests on fine white sand. The uppermost mud is used for dyeing black, and produces »the most beautiful black». Mention is also made of blackish fishes. These springs are also mentioned in passing in the chapter on warm springs[86] on account of the peculiarity that three such different kinds of water could spring forth from the same bed.

Another manuscript (read February 5, 1720) treats of »Nya anledningar til grufwors igenfinnande eller några än oopfundna grep til at opleta grufwor och skatter, som i jorden diupt äro giömda». In the introduction a criticism on extravagance is made: »What use is there of looking for new ores in a land where so much is spent extravagantly?»

Most of the mines have been discovered where the surface of the rock has lain bare and the ore exposed, or by accident when the ground was removed. Presumably, however, there still are great undiscovered riches in the

[1] According to a kind communication from the State Geologist Dr. H. MUNTHE, the hard slate referred to by SWEDENBORG is evidently the flinty limestone stratum in the lower part of the trinucleus schist at Offerkällan, which has been described by MUNTHE. Cf. MUNTHE: Beskrifning till kartbladet Sköfde, pp. 41, 42. S. G. U., Ser. Aa, N:o 121. Stockholm 1905. See also MUNTHE: De geologiska hufvuddragen af Västgötabergen och deras omgifning. Geol. Fören. Förhandl. **27** (1905).

depths of the earth, and it would be a noble art to be able to arrive at conclusions respecting them from the outer conditions. The divining rod is nothing but a superstition. But on the contrary it is »a truth clear as daylight» that above all metals, mineral veins and other treasures there exists as it were a vapor, so that at night it shines and spreads a strong light to a great distance[!]. In mining places it is usual[?] to see fiery lights at night, which disappear when one approaches more closely; these are considered by SWEDENBORG to be derived from the veins of metal, etc.[1]

Were our senses sufficiently acute they would indicate what exists in the depths of the earth; but this not being the case we must try other ways and note all the possible conditions which are present where ore is actually found in order to ascertain whether the conditions deviate in any way from those of the surrounding regions. For example, about 200 or 300 specimens of every kind of grass and herb should be collected in order to ascertain whether they exhibit dissimilarity above the metalliferous vein. Perhaps distinct species may even be found there. Attention should be paid to trees, lichens, twigs, stumps, the kinds of earth, water, frost, ice, snow, insects; the relationship of various vapors should be examined, etc.

Were our senses 100,000 times finer than they are we should be able to discover by means of smell and sight how the »effluvia» rush like streams out of the rich metalliferous veins.

This manuscript deviates much from the remaining contributions of the usually keen investigator. The circumstance that he did not print this contribution perhaps indicates that he himself was not satisfied, and I have therefore been doubtful whether it should even be mentioned, for we do not perform any service to a person by publishing after his death an article with which he himself was not pleased. That I nevertheless mention it depends upon this, that the series of thought itself is altogether right, although the point of departure may be defective. If, as SWEDENBORG supposed, there actually were special vapors or exhalations above metalliferous veins, they would no doubt make themselves noticeable in a variety of ways, and it would then be possible to discover the metalliferous veins in the ways which are adduced by him.

[1] According to a letter, dated September 21, 1906, received from the Government Inspector of Mines A. S. BACKE, Bodö, Norway, since the first publication of these remarks, it seems to be a general belief not only in Cornwall, but also in other parts of Europe, that such lights are observable. To quote: »It surprised me to learn that this belief, which I during my stay in the mines of Cornwall as a young man in the decade of 1860 to 1870 heard expressed by old miners, has also been shared by men in the rest of Europe. My people in Cornwall were convinced that in the evenings and nights there could be seen a light above the important ores, which include Dolcoath, Cook's kitchen, * * etc., round about Camborne. They had also sometimes observed something similar above other veins of metal. Even some of the master miners themselves were not free from the same belief. When I spoke of the well known light observed on the one side of the Lysfjord in the district of Stavanger, which light has given the fjord its name, the matter aroused their great attention, because they felt sure that the light came from a great supply of ore. (The phenomenon is explained by Major WIBO in Petermanns Mittheilungen)».

See also the contribution by Professor HJ. SJÖGREN at page 49 et seqq.

Paleobotanical contributions.

As was mentioned above, SWEDENBORG describes a number of the fossil plants found at Liège, which he, together with his companion, the Provincial Physician in Vestrogothia, JOHAN HESSELIUS, collected on the journey. The illustrations, which will now be examined, have been reproduced in facsimile in the accompanying Plate I. Although there are no statements concerning the scale according to which the figures are drawn, still a majority of them may be determined, at least as to the genus.

As long ago as 1836 GÖPPERT[1] called attention to the plant-fossils from Liège described by SWEDENBORG. »Auf einer Tafel Abbildungen von Abdrücken aus dem Steinkohlensandstein und Schieferthon: Fig. A, C—I, O—R Arten der Gattung *Pecopteris* und *Neuropteris* in schwer zu bestimmenden Bruchstücken. Fig. B scheint eine zufällige dendritenähnliche Bildung. Fig. H. Stück eines plattgedrückten Calamiten. Fig. L. *Favularia*. Fig. M. *Lycopodiolithes dichotomus*.[2] Fig. N. Vielleicht ein Calamit».

SWEDENBORG's views concerning the fossils are found partly in the text[68] and partly in the *Index petrificatorum*[150] which accompanies the plates. If we endeavor, according to the present standpoint of science, to determine as well as is possible without access to the originals the fossils of which figures are given, the result will be about as follows.

A, C and F probably *Alethopteris*, while O, which is considered by SWEDENBORG to be of the same kind as the foregoing (»A, C, F, O, Ramusculi, ut opinor, buxi»), possibly is rather a *Neuropteris*.

B, »Ramusculus Tithymali Cyparrisini», cannot be determined with certainty; Professor POTONIÉ of Berlin, with whom I have conferred in regard to the matter, supposes that possibly an *Aphlebia* may be in question. GÖPPERT's opinion, that it might be a dendrite, appears to be improbable.

E, G, K, R, »Foliola, ut puto, osmundae vel filicis», are perhaps of some *Neuropteris*. The little branch in the middle of K is perhaps a *Lepidodendron*.

D, I, P, Z, »Foliola ex ramis praedictis, ut opinor, sed majora», without doubt *Alethopteris*, probably A. *lonchitica*.

[1] H. R. GÖPPERT: Die fossilen Farnkräuter (Systema filicum fossilium). Breslau & Bonn, 1836. Nova acta etc., T. 17. Supplement, p. 18, note 1.

[2] *Lepidodendron dichotomum*.

H »est frustum quoddam a duabus partibus rotundum cum sulcis rectis, venientibus a quadam linea minori», according to the text, while in the explanation of the figures there is only *Lithoxylon.* Probably *Calamites.*

L, evidently, as already Göppert held, *Sigillaria* from the group *Favularia.* The text says »Speciem praebet spicae tritici indici (*mais*) dicti, nisi forma esset plana», while the explanation of the figures has »exuviae, credo, piscis Schottolf vocati».

M, in the text: »an exuviae tales piscis dentur, an arboris sit foetus, dubito»; in the explanation of the figures: »exuviae piscis, Pectinis, vel Cyprini, vel Capeunae vel Pudiano dictae». It is impossible to decide with certainty from the figure whether it be a rest of a plant or not. The figure also reminds one of a *Knorria* form of *Lepidodendron,* and Professor Potonié has informed me that the workingmen at the quarries always consider such specimens to be fishes.

N, in the text: »belemnitis species», in the explanation of the figures: »sive vegetabile, sive exuviae cujusdam serpentis majoris in rugas contracti, sive species belemnitis», appears to be an *Artisia* (the cast of the pit-cavity in *Cordaites*) and cannot in any case be a belemnite.

As may be seen, Swedenborg had a conception of the objects in question which was quite right in so far as he saw that they really were plants imbedded in the clay. That his interpretations could not at that time be right as to the details is on the other hand evident. But still he recognized some of them as being ferns.

The circumstance that Swedenborg was the first Swede who described plant-fossils and interpreted them in a manner satisfactory for those times, led me as long as 30 years ago to name a genus of fossil plants *(Swedenborgia)* after him.[1] It may also be mentioned in this connection, that in the State Museum for Natural History at Stockholm, in the department for fossil plants, there is a fossil tree-trunk of some size, 0.85 m. high and 0.3 m. in diameter, (Plate V., Fig. 1), which bears a printed label reading: »Petrified tree-trunk. East India. From Em. Swedenborg's collections» (»Förstenad trädstam. Ostindien. Ur Em. Swedenborgs samlingar»). There is unfortunately no further information concerning this trunk beyond what the label supplies; the trunk comes from the muse-

[1] A. G. Nathorst: Bidrag till Sveriges fossila flora. Sv. Vet. Akad. Handl. Bd. 14, no. 3. Stockholm, 1876. At Belsund in Spitzbergen »Mount Swedenborg» (»Swedenborgs berg») was named after him in 1898.

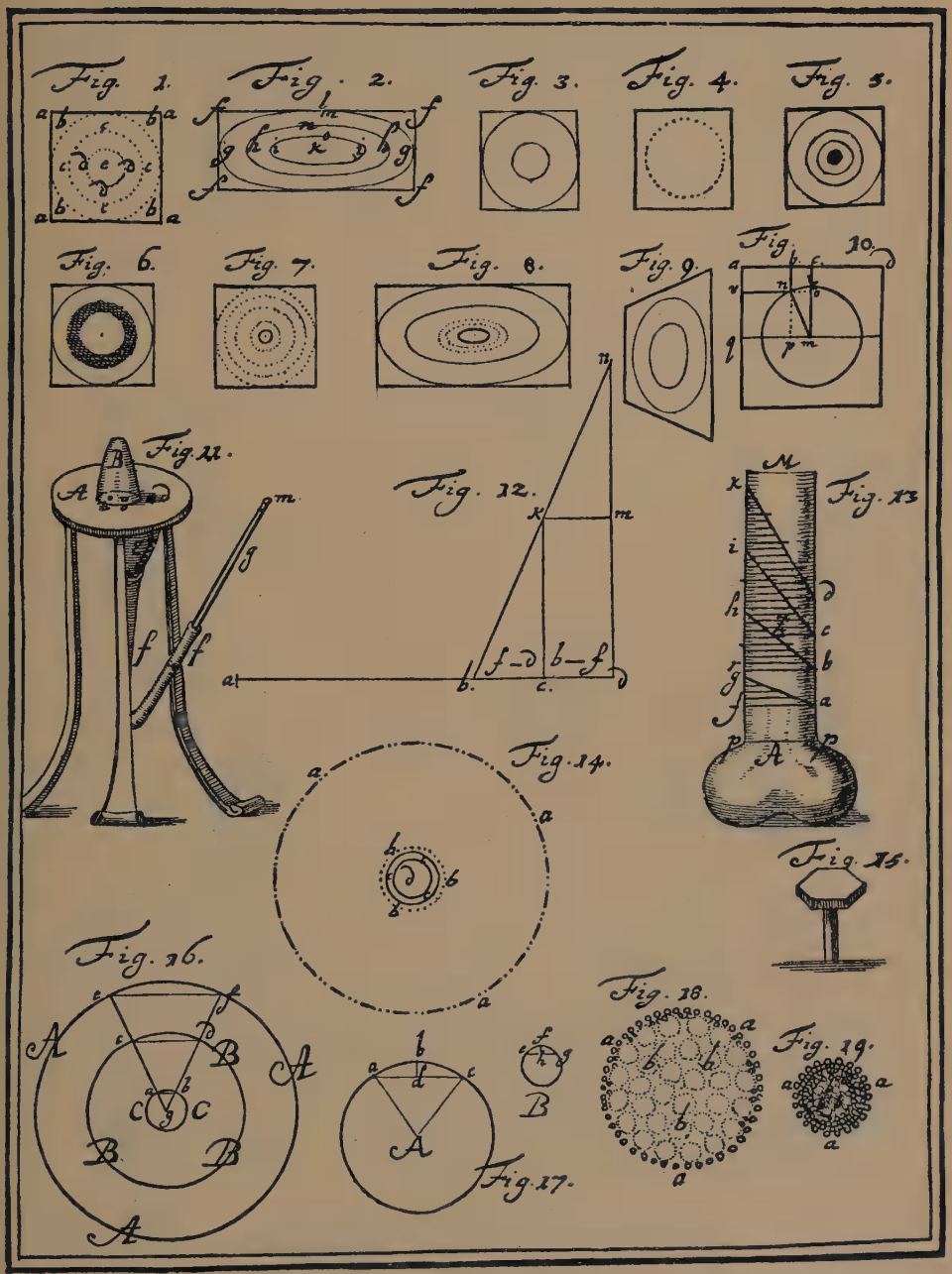
Plate I.

A facsimile, $^1/_5$ natural size, of the first plate in SWEDENBORG's *Miscellanea Observata*, Lipsiae, 1722.

Plate II.

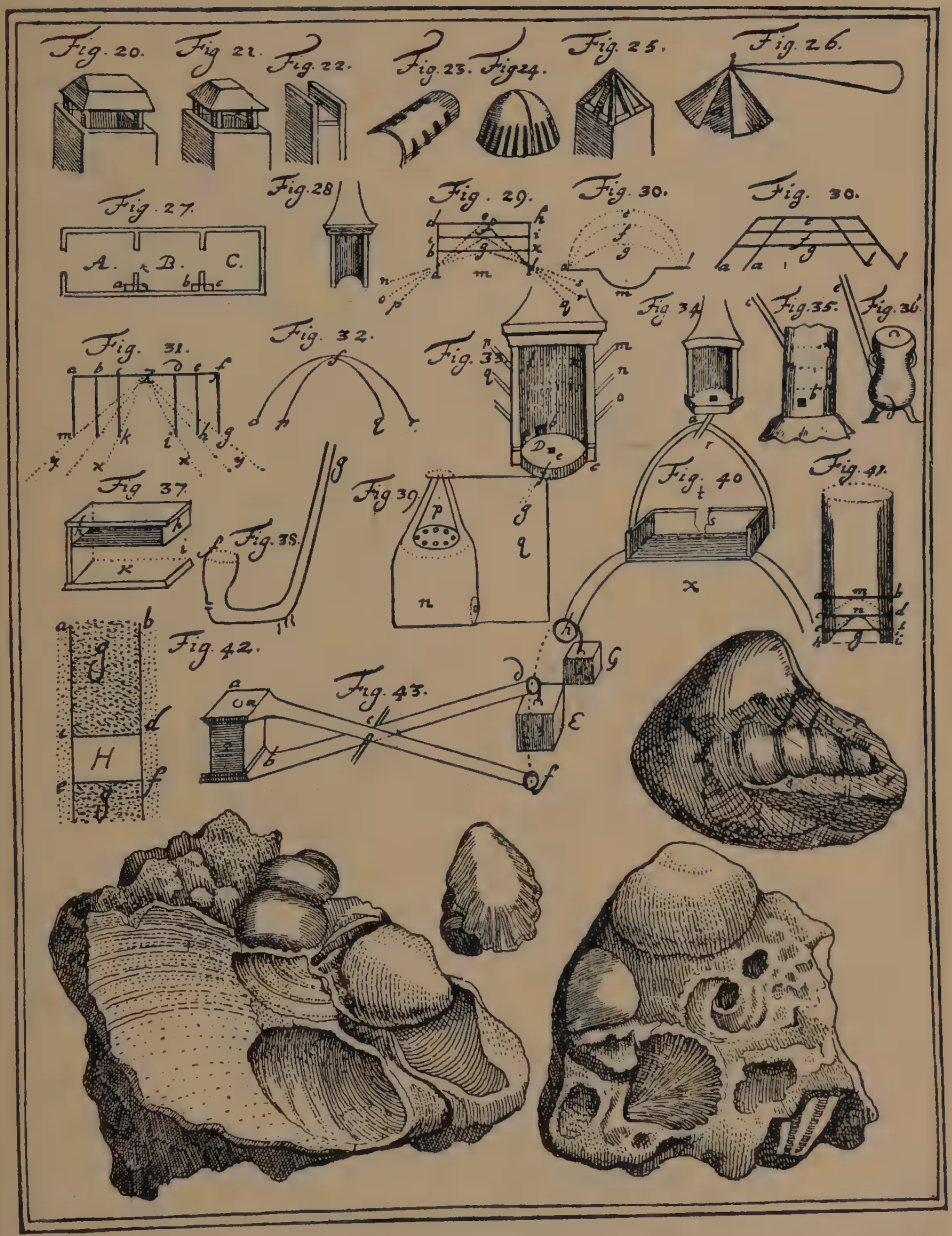
A facsimile, $^4/_5$ natural size, of the second plate in SWEDENBORG's *Miscellanea Observata*, Lipsiae, 1722.

Plate III.



A facsimile, $^4/_5$ natural size, of the third plate in SWEDENBORG'S *Miscellanea Observata*, Lipsiae, 1722.

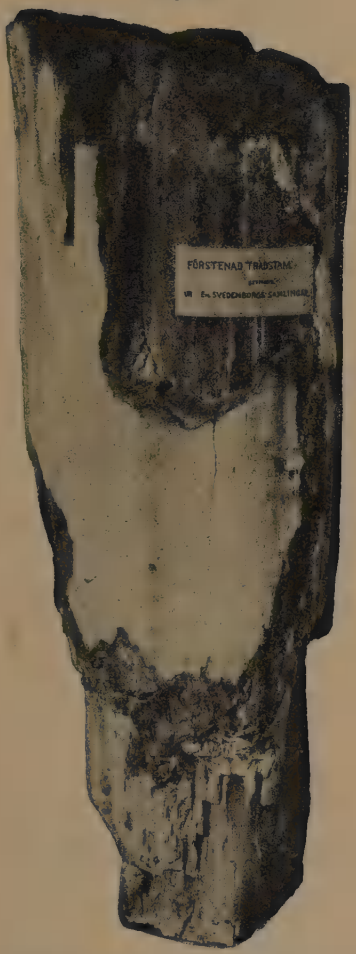
Plate IV.



A facsimile, $^4/_5$ natural size, of the fourth plate in Swedenborg's *Miscellanea Observata*, Lipsiae, 1722.

Plate V.

Fig. 1.



Petrified tree-trunk from East India, which is reported as being from the collections of SWEDENBORG. $^1/_7$ of the natural size. Reproduced from a photograph of the original.

Fig. 2.

Calymmene sp. in various positions. Facsimile of SWEDENBORG's figure, 1717.

Fig. 3.

Atrypa reticularis. Facsimile of SWEDENBORG's figure, 1717.

Plate VI.

TABVLA 2. de Cupro
Figura ordine petrificatas integerrimæ exsurgens in
strato quodam grisei coloris calcis lapidis
Kalkstein und Schiefer-Lagen, non procul
a Gebura, circa Altenstetten in Thuringia
Sæpe Memoratum Jam adque Jam
mittam TRIERENSEM in Electo
ratu Saxonico tanquam parem
pertinax, ututo prætor lapis
1734 inventa est

Proterosaurus Speneri H. v. Mey. A facsimile, $^1/_3$ natural size, of Swedenborg's plate, 1734.

um's older collections. Even with a magnifying glass it may be observed that an angiosperm is in question, but no microscopical investigation of it has thus far been carried out.[1]

Swedenborg, in his great work on Copper, etc.[2], has furnished some illustrations of certain plant-fossils from the Kupferschiefer, but they are, as Göppert already pointed out, not original illustrations, but, together with a number of fishes likewise figured, copies of the plates in G. F. Mylii Memorabilia Saxoniae subterraneae (Leipzig 1, 1709; 2, 1718). But in Plate 84 some petrifications are delineated because of their being changed into pyrites or because surrounded by concretions of it, and in Plate 85 there is also a »*Xylopyrites*» or »*Lithoxylon pyritosum*», that is, fossil wood changed into pyrites. These are presumably original illustrations.

Paleozoological contributions.

In the fifth number of Sweden's first scientific periodical, »Daedalus»,[3] published by Swedenborg (Swedberg), there is delineated on the plate accompanying page 102 an enrolled *Calymmene* in four different positions (Plate V., Fig. 2), and besides a brachiopod (Fig. 3) which, according to Professor G. Holm, is without doubt *Atrypa reticularis*, one of Gothlands most common fossils. It is therefore probable that the trilobite also comes from Gothland. Differently from the rest of the figures on the plate these figures are not numbered, and the text contains no information concerning them. The figures in question are especially interesting, since they belong to the oldest illustrations of petrifications produced among us.[4]

As was mentioned above, Swedenborg has furnished illustrations of a number of the cretaceous fossils collected at Lousberg near Aix-la-Chapelle. These illustrations fill a complete page, and a part of a se-

[1] Among the reasons for not making a microscopic examination is this, that it appears to be difficult to obtain a fragment of the best preserved parts without badly splitting the trunk.

[2] E. Swedenborg: Opera philosophica et mineralia. III. Regnum subterraneum sive minerale. De cupro et orichalco etc. Dresdae et Lipsiae 1734.

[3] Daedalus. V. For the months of January, February and March, 1717. Described by Em. Swedberg.

[4] Professor L. Roberg had two years before in his treatise »De fluviatili astaco» (Upsala 1715) figured two trilobite pygidia, one of which, according to C. Wiman (Studien über das Nordbaltische Silurgebiet. Bull. Geol. Inst. Upsala, vol. 6, 1905), belongs to *Megalaspis limbata*.

cond (Plates II. and IV.) Only those which are found on the former page are furnished with letters, which refer to Swedenborg's explanation, partly in the text, partly in the *Index petrificatorum*.[150]

Four years ago I sent prints of the plates to Professor E. Holzapfel of Aix-la-Chapelle, in order to ascertain whether the illustrations permitted of the determination of the fossils, and he in answering communicated that »von den abgebildeten Fossilien sind eine gute Anzahl sofort und sicher bestimmbar, andere zweifelhaft oder unbestimmbar».

The determinations carried out by Professor Holzapfel are given below with Swedenborg's own titles in parentheses.

R. *Serpula tuba* Goldf. (»Tubuli vel penicilli marini»).

S. *Turritella sp.* (»Pectunculi cum turbine»).

T. *Trigonia Vaalsiensis* J. Böhm. (»Pecten gematus»).

V.? (»Chama aspera Bellon, ut credo»).

W. *Turritella sexlineata* Röm. (»W, X, C Turbines longi»).

X. *Turritella* sp. Unsicher bestimmbar. C?

Y. *Serpula filiformis* Goldf. (»Tubuli alii parvi vermiculares»).

Z. *Pectunculus Geinitzii* d'Orb. Fragment. (»Species Tellinae»).

A.? (»Pecten»). B.?

D. *Ostrea laciniata* Nilss. (»B, D Conchae longiores, Rondels: ex materia chrystallina, cum parvis chrystallis intus»).

E.? (»Musculus cum inclusis pectunculis et turbinite»).

F.? (»Chama levis»).

G. *Vola quadricostata* Sow. (»Pecten»).

H. Cfr. *Cardium Marquarti* Müll. (»H, M Pectunculi partim sabulosi, partim chrystallini»; M is not found among the figures).

I. *Tapes faba* Sow. sp. (»Concha rugosa»).[1]

K. »*Microbacia coronula* Goldf.» (»Arundo fracta»).

L. *Pecten virgatus* Nilss.

On the second plate (IV.) there are four fossils delineated, of which but two are determinable. One of these is *Ostrea Goldfussi* Hzl, while the second contains among others what is clearly a *Pecten virgatus* Nilss.

Professor Holzapfel has consequently been able to identify not less than 11 species, which demonstrates that the plates must be considered as having been rather carefully executed.

It would seem that Swedenborg's observations concerning Lousberg

[1] »Concha rugosa» certainly stands at F, but since F was before used for »Chama levis», and is missing in the explanation of figures, there is probably a printer's error here.

and its petrifications have not been noticed by the German geologists; Professor Holzapfel namely writes about this in his letter of Sept. 21, 1903: »Ihre freundlichen Mitteilungen über Swedenborg haben mich natürlich sehr interresiert, um so mehr als mir nichts davon bekannt war, dass Swedenborg über den Lousberg und seine Fossilien überhaupt etwas geschrieben hat. Ich bezweifle auch, dass die geologische Litteratur die Swedenborg'schen Mitteilungen überhaupt berücksichtigt hat. Mir wenigstens ist nichts davon bekannt geworden».

But the most interesting of Swedenborg's contributions in the paleontological field is the illustration of a saurian skeleton furnished by him, which is given in plate 2 (not II) in his great work» De Cupro», etc. It had been found in 1733 in the Kupferschiefer at Glücksborn, not far from Altenstein in Sachsen-Meiningen, and was preserved by the Councillor of the Court and Mines Trier in Dresden. From Swedenborg's diary for 1733 it is seen that he visited Trier on August 30, »ubi diversi generis mineras et musculos mihi videre contigerat, praeterea etiam aliquod sceleton felis marinae cum suis articulis et pedibus in lapide scissile», etc.

There is a letter from Swedenborg to Trier[324], written at Leipzig, January 5, 1734, in which Swedenborg thanks him for the beautiful drawing of »felis marina» which had been sent to him, and he furthermore asks for permission to publish it in his work (Opera philosophica et mineralia) and requests more particular information concerning the find. In the text of this work he states (p. 168) concerning the fossil in question: »repraesentat animal quoddam marinum, amphibium, vel aliud, ex cauda augurari licet felis marinae quoddam genus fuisse». His pleasure over the beautiful specimen is evident from the following words: »est inter omnes, quas vidi lapidibus impressas formas piscium et animalium exstantissima & integerrima». A reduced facsimile of Swedenborg's plate is reproduced here, (Plate VI.), being one third of the size of the original plate.

There has been much speculation as to what Swedenborg really meant by »felis marina», and by a literal translation it has been interpreted to be monkey, »Meerkatze»! This may have been done because, as Mr. A. Stroh has informed me, some copies of Swedenborg's work are accompanied by a folio page with printed directions for the binder,[1]

[1] »Dem Buchbinder zur Nachricht hat man folgende *Specification* der Kuppfer und Paginarum für dienlich erachtet.»

in which »Meerkatze» is also included. But it is clear that SWEDENBORG himself cannot be responsible for this; it is more likely that he gave the publisher instructions written in Latin, which were afterwards translated by him, if indeed they did not come from his pen directly. »Felis» can never have meant an ape; it is employed in the Latin language for cat, and sometimes also for marten and pole-cat, but as employed by SWEDENBORG it has clearly only signified some kind of animal of prey. The translation of »felis marina» by »Meerkatze» is consequently just as arbitrary as if one were to translate it by the Swedish »hafkatt» (»sea-cat», *annarichas*), which in fact is a fish: neither the one nor the other is meant. Just as unwarranted is TH. V. SÖMMERING'S view, that SWEDENBORG meant the sea-bear (*Arctocephalus ursinus*), since in Russia it is among other things called »Seekatze» (»sea-cat»). SWEDENBORG had in mind nothing more or less than some kind of animal of prey (probably one living in the sea).

The specimen figured by SWEDENBORG was however not the first one of this species which had been found, although he had no knowledge of the preceding finds. As early as 1706 a specimen had been described by CHR. M. SPENER, a second by LINCK, in 1718, and SWEDENBORG'S was consequently the third which came to the knowledge of the learned world. All of these specimens are mentioned in 1808 by CUVIER, who also furnishes a reduced copy of SWEDENBORG'S plate[1]. »La troisième», the text reads, »est gravée dans le Traité *de Cupro*, du fameux EMMANUEL SWEDENBORG, pl. 2. L'auteur la regarde comme une espèce de *guenon* ou de *sapajou*», etc., so that here the »Meerkatze», referred to above, continually and without any justification still haunts the reader, in opposing which H. V. MEYER (see below) remarks, that »kein angesehener Schriftsteller *felis marina* mit Meerkatze übersetzt habe.»

CUVIER, who also mentions SWEDENBORG'S specimen in his great work »Ossements fossiles» in exactly the same words as in the work quoted above, supposed that the fossil was a monitor, but H. V. MEYER, in his work on the saurians of the Kupferschiefer,[2] has demonstrated that a peculiar reptile genus *Proterosaurus* is in question, which is now referred

[1] CUVIER: Sur les ossemens fossiles de crocodiles, et particulièrement sur ceux des environs du Havre et de Honfleur, avec des remarques sur les squelettes des sauriens de la Thuringe. Ann. du muséum 12 (1808), p. 79, taf. 10, fig. 2.

[2] H. VON MEYER: Zur Fauna der Vorwelt. (3). Saurier aus dem Kupferschiefer der Zechensteinformation. Frankfurt am Main 1856. Folio.

to the order *Rhynchocephalia*. ZITTEL expresses himself in regard to these reptiles as follows:[1] »Die Rhynchocephalen, von denen gegenwärtig nur noch die einzige Gattung *Sphenodon* (*Hatteria*) in Neu-Zeeland lebt, besitzen die primitivsten Merkmale und dürften den Urreptilien, aus welchen alle übrigen Ordnungen hervorgegangen sind, am nächsten stehen.»

From this it is clear that the fossil in question is of great scientific interest. The species was called by *v. Meyer*, after the discoverer of the first specimen described: *Proterosaurus Speneri*. He figures the specimen of SWEDENBORG on Plate 8 and says that it is unusually well preserved. It is now kept in the »Naturhistorisches Hofmuseum» at Vienna.

A Retrospect.

From the account given in the preceding pages the statement made in the beginning of this Introduction is justified, namely, that SWEDENBORG's contributions in the field of geology are of such a significance and sweep, that they alone would have been sufficient to have secured him a respected scientific name. At the early age of thirty-five — he was born in 1688 — he had published a majority of the works of which an account has here been given, and he afterwards added to them, in the field of metallurgy, the two large volumes on Copper and Iron. In the preceding pages, if the petrifications figured in the work on Copper be excepted, no attention has been paid to these two works, but it would be desirable that an account of them should be given by some person competent in the departments mentioned.[2]

One immediately notices in studying SWEDENBORG's geological writings that an investigating nature of the highest rank is in question, which on a solid foundation and with sharp powers of observation noticed everything, even what was apparently insignificant, in order to draw conclusions from it, and which when possible endeavored to control the

[1] K. v. ZITTEL: Grundzüge der Palaeontologie, p. 635. München & Leipzig 1895.

[2] It may be of interest to here quote one of A. E. NORDENSKIÖLD's statements concerning SWEDENBORG: »known in the history of the natural sciences by various geological contributions excellent for his time, by a remarkable work on the atomic theory, by some investigations in crystallography, by the largest and most comprehensive handbook in metallurgy in its day, etc.» (A. E. NORDENSKIÖLD: Ett blad ur de svenska naturvetenskapernas historia. Framtiden, tidskrift för fosterländsk odling utgifven af C. v. BERGEN. Ny följd, första årg. 1877, p. 24).

correctness of the same by experiment. The wealth of observations which he collected from various parts of Europe is astonishing, and he did this at a comparatively early age. Even if he did not free himself from the incorrect view that Noah's flood extended over the whole earth, he nevertheless saw that many phenomena which testified to a higher water-level in former times did not arise from the so called universal flood, and this in itself involves a step forward in the direction of a complete liberation from the dogma which had prevailed up to that time, and which had exercised so restricting an influence on the development of geology. The condition of chemistry at that time was a great disadvantage to him, for he could not make use of it to arrive at a final solution of various questions, even when he was on the right road. But the many-sidedness, to which his geological works bear witness, is truly remarkable; nearly all questions of great significance for the geology of that time are touched upon by him, and still these works are but the minor portion of his whole scientific activity, which in many respects was far ahead of the times. For he was also a mathematician, astronomer, cosmologist, physicist, mechanic, chemist, anatomist and physiologist. What Anders Retzius said concerning Swedenborg's »Regnum animale», that it is a »wonder-book», in which are found »ideas belonging to the most recent times, a compass, induction and tendency, which can only be compared to that of Aristotle», seems after the experience now attained to be capable of application to practically the whole of his scientific activity. His was a mighty spirit, of which our country has the more reason to be proud, because it was united with a personality in every respect noble and unassuming.

The works of Swedenborg which are of geological or partly geological content.

A. ***Reprinted*** in the edition of Swedenborg »*Opera quaedam aut inedita aut obsoleta de rebus naturalibus*», published under the auspices of the Royal Swedish Academy of Sciences (1—5 in the first volume, 6 in the second).

1. Om watnens högd och förra werldens starcka ebb och flod. Bewjs utur Swergie. Stockholm 1719.[1]

2. Anmärckningar om musslor, sneckor etc. i kalcksten; och om skifwer. In manuscript in Codex »XL. Bibliothecae Lincopiensis».[29]

3. Om Wennerns fallande och stigande och huru wida thet härröra kan af wattnets tillopp eller aflopp igenom strömmar. In manuscript in Codex »XL. Bibliothecae Lincopiensis».[33] (2 and 3 in photolithographic facsimiles of the MSS. of SWEDENBORG, published by the New Church in North America and England by R. L. Tafel; see Vol. I., EMANUELIS SWEDENBORGII Miscellanea physica et mineralogica ex annis 1715 ad 1722, Stockholm, 1869).

4. Excerpta tria ex Actis Literariis Sveciae ex annis 1720—1721.[41] (1. Resumé of the treatise *On the Height of water, etc.;* 2. Various observations on Venner and Vetter, communicated with SWEDENBORG's, together with a resumé of the treatise *On the Falling and Rising of Lake Venner.* 3. SWEDENBORG's letter to JACOB A MELLE.

5. Miscellanea observata circa res naturales & praesertim circa mineralia, ignem & montium strata. 1—3. Lipsiae 1722. Pars quarta miscellanearum observationum circa res naturales & praecipue circa mineralia, ferrum et stallactitas in cavernis Baumannianis etc. Navpotami vulgo Schiffbeck bey Hamburg 1722.[59–191]

6. Prodromus principiorum rerum naturalium, sive novorum tentaminum chymiam et physicam experimentalem geometrice explicandi. Amsterdam 1721. 16:o.

B. ***Not reprinted.***

7. Opera philosophica et mineralia. II. Regnum subterraneum sive minerale. De ferro deque modis liquationum ferri per Europam passim in usum receptis: deque conversione ferri crudi in chalybem: de vena ferri et probatione ejus: pariter de chymicis praeparatis et cum ferro et victriolis ejus factis experimentis &c. Dresdæ et Lipsiæ 1734. Folio.

8. Opera philosophica et mineralia. III. Regnum subterraneum sive minerale. De Cupro et orichalco deque modis liquationum cupri Europam passim in usum receptis: de secretione ejus ab argento: de conversione in orichalcum: inque metalla diversi generis: de lapide calaminari: de zinco: de vena cupri et probatione ejus: pariter de chymicis præparatis et cum cupro factis experimentis &c. &c. Cum figuris æneis. Dresdæ et Lipsiæ 1734. Folio.

C. ***Manuscripts.*** (In Codex »XL. Bibliothecae Lincopiensis»).

9. Om åtskilliga slags jordmohner och gyttior.

10. Nya anledningar til grufwors igenfinnande eller några än oopfundna grep til at opleta grufwor och skatter, som i jorden diupt äro giömda.

EMANUEL SWEDENBORG AS A COSMOLOGIST

BY

SVANTE ARRHENIUS

WITH FOUR PLATES

STOCKHOLM
AFTONBLADETS TRYCKERI
1908

EMANUEL SWEDENBORG AS A COSMOLOGIST[1]

BY *SVANTE ARRHENIUS.*

The present volume of SWEDENBORG's scientific works contains his perhaps most highly valued work »Principia rerum naturalium».[2] In this work he attempts to give a philosophical presentation of what we might call molecular structure. Now since SWEDENBORG considered everything in the world, the small as well as the great, to be constructed according to the same fundamental principles, he has also in this work presented his views concerning the structure of the solar and world systems, which views have won considerable praise for the reason that the planets are described as having gone forth from the sun by means of a kind of centrifugal expulsion, a view which subsequently became classical in the works of BUFFON, KANT and especially of LAPLACE. We also find in SWEDENBORG's *Principia* reflections concerning the relation of the solar system to the milky way which remind us very much of the later expressions of WRIGHT, KANT and LAMBERT. In this Introduction SWEDENBORG's cosmology and physics as set forth in the *Principia*

[1] Translated by ALFRED H. STROH from the original Swedish and revised by the author. Now reprinted from the Introduction to Vol. II. of the edition of SWEDENBORG's scientific texts under publication by the Royal Swedish Academy of Sciences at Stockholm: EMANUEL SWEDENBORG, Opera quaedam aut inedita aut obsoleta de rebus naturalibus, nunc edita sub auspiciis Regiae Academiae Scientiarum Suecicae, II., Cosmologica, introductionem adiunxit SVANTE ARRHENIUS, edidit ALFRED H. STROH. Holmiae, ex officina Aftonbladet, 1908. Four plates from Part III. of SWEDENBORG's *Principia* of 1734, illustrating his theories of the development of the solar system and of the constitution of matter, are reproduced at the close of this contribution.

[2] In 1721 SWEDENBORG published at Amsterdam a *Prodromus Principiorum rerum naturalium,* reprinted in Vol. III. of this series. The *Principia rerum naturalium,* printed in the present volume,1–191 is in all probability the manuscript work referred to by SWEDENBORG in a letter dated Nov. 27, 1729, printed in Vol. I.321 In 1734 SWEDENBORG published at Dresden and Leipsic three folio volumes entitled *Opera Philosophica et Mineralia,* the first volume being his final *Principia rerum naturalium.* A summary of the final *Principia,* left in manuscript by SWEDENBORG, is printed in the present volume,207–262 and also the entire *Third Part* of the *Principia* of 1734.263–368

will be especially considered, but notes concerning his numerous contributions to physics, and also to chemistry, will be found in Vols. I. and III. of this series.

As concerns the printed *Principia*, SWEDENBORG has divided it into three parts. The contents of the first and third parts are for the most part contained in the hitherto unprinted *Principia*, published below.[1–191] They are mainly of a natural philosophical content, which is also referred to by SWEDENBORG in the Appendix to the printed *Principia*.[360] On the other hand the second part is of physical content and SWEDENBORG there renders an account of a great number of experiments with the magnet. In this second part there are also found numerous references to the works of other investigators, while such references are altogether lacking in the first and third parts, which are clearly based exclusively upon the author's philosophical thinking. Of the first and second parts a summary by SWEDENBORG has been printed,[207–262] corresponding for the most part to the portions italicized by SWEDENBORG in the printed *Principia*. The third part, which chiefly contains the presentation of SWEDENBORG's cosmology, has been reprinted unabridged.[263–368] It is also without doubt this part of SWEDENBORG's scientific writings which more than any other has attracted general attention.

In order to obtain a general view of the contents of this extended work I have made a comparative investigation of the general conceptions in SWEDENBORG's time concerning matter and especially concerning the cosmological problems, the results of which I here reproduce.

Chemistry in those times occupied a very undeveloped standpoint. The four elements set up by EMPEDOKLES still governed the presentation of the chemical phenomena. In physical considerations, however, the conceptions admitted in chemistry were considerably modified. DESCARTES, who without doubt exercised the greatest influence on SWEDENBORG's views, supposed that originally there was only one kind of material particles. By their striking each other their corners were knocked off, so that there were formed particles completely round and transparent, which were called »particles of the second kind». Out of the knocked off corners there was formed a fine dust of »particles of the first kind», which formed the fixed stars. They corresponded to the fire or light particles of those times. By their condensation there were formed opaque grosser »particles of the third kind», which occur in the sun spots; and by their further condensation were formed »particles of the fourth kind», which constitute the earth's crust.

It may be seen from this that the conception of DESCARTES had scarcely anything in common with that which now obtains. No other experience lies at the basis of this supposition than that bodies of very differing physical properties occur. There is no further explanation of the dependence of these physical properties upon the supposed peculiarities of the particles.

In SWEDENBORG'S work no other change is made in these conditions than that the number of particles is increased and an attempt made to derive all of them from the mathematical point.

This section is not of particular interest, but of the greater interest is his treatment of the cosmological problems, which has also attracted considerable attention. We there find expressed various views which correspond more closely to our present conceptions than do those of SWEDENBORG'S predecessors.

In the field of the natural sciences cosmology, or the doctrine of the origin and development of the heavenly bodies, is considered to be a part of astronomy. But on examining this chapter of astronomy it is found that most of the astronomers were not attracted by the cosmological problems, which have been worked upon for the most part by the philosophers. LAPLACE, whose contribution to our cosmological conception is often brought forward as one of the foremost truths of science, has published it in a short note at the close of his great work *Exposition du système du monde.* On the other hand KANT has treated the same subject at great length in his *Naturgeschichte und Theorie des Himmels.* This peculiarity is easily explained by the fact that while ordinary astronomical work is rather uniform and demands an accuracy exceeding that which is found in the other exact sciences, the cosmological presentations are usually characterized by general features with rather little precision, which are derived from very different branches of science and for the working out of which fancy is used much more than calculation.

It is as a link in the long chain of development of the cosmological conceptions, reaching back all the way to the oldest Greek philosophers, that SWEDENBORG'S cosmological contributions are of considerable interest. ANAXIMANDER (611—547 B.C.) darkly hints that an infinite number of heavenly bodies was formed out of the original chaos by some kind of a circular motion. EMPEDOKLES (about 450 B.C.) also has a very uncertain conception that the heavenly bodies have been separated out from an originally uniform chaos. Similar views are expressed by

Anaxagoras, the teacher of Perikles. These first attempts at presenting the evolution of the world were, however, forgotten under the influence of Aristole's doctrine and the tradition of the church during the middle ages. The man who again took up the old problem was not at all an astronomer like Kopernikus or Kepler, but the philosopher Giordano Bruno. He attacked the reigning doctrine in the most violent manner and took the position that the world is infinite and that the fixed stars are suns, around which inhabited planets revolve. He considered the planets to be floating in an infinite, transparent ocean of ether.

To this last doctrine Descartes gave a more scientific formulation. Having observed that all the planets are borne forward around the sun in the same direction, he concluded that this depended upon a vortex formed around the sun by the ocean of ether, which vortex when observed from the sun's north pole flows round from right to left and thus drags along with itself the planets which float in it. The planets he assumed to have entered the vortex from without, from cosmical space, where they once were suns, each surrounded by its own vortex. These suns had however been extinguished and the vortex circling around them weakened, after which they were drawn into a neighboring mighty solar vortex. For our manner of viewing these things this conception that the planets are dragged along by a vortical ocean of ether seems very unjustifiable. But the conditions were altogether different in the time of Descartes. He did not know about Newton's gravitation. If the planets were not dragged along but moved themselves independently, they would travel in straight paths and soon move away from the sun. This ought indeed also to be the case with the particles of the ocean of ether. That they did not move away Descartes could explain in this way only, that they met resistance from other ether particles which were in vortices around neighboring fixed stars and so prevented the parts of the solar vortex from penetrating into foreign regions. It was therefore very natural to assume such a vortex around the sun. Descartes assumed that the vortex existed perpetually.

Swedenborg, although he makes no mention of Descartes in the *Principia,* was without doubt most strongly influenced by the teachings of his great predecessor. The presentation of the system of the world as given by Descartes was presumably referred to in the lectures at Upsala as a truth generally received, whose author was not especially

pointed out since the views displaced by him were not thought worthy of mention. SWEDENBORG has received from DESCARTES the doctrine of vortices of ether around the fixed stars. But in this doctrine he has made two modifications. He has assumed that the vortical motion arose gradually and did not exist from the beginning. This view, also held by KANT, may be thought to have a philosophical advantage over that of DESCARTES, but it is opposed to the fundamental principles of mechanics and is therefore untenable from the standpoint of natural science, wherefore it was also abandoned by LAPLACE.

The other modification of the views of DESCARTES has won much more approval. Not without foundation did it seem to SWEDENBORG simpler to assume that the planets and moons of the solar system proceeded from the solar mass instead of having wandered in from portions of space lying outside of the solar system. This thought has been taken up by BUFFON, KANT and LAPLACE and is the fundamental thought in the admired hypothesis of LAPLACE. As regards details SWEDENBORG diverges essentially from his successors. KANT and LAPLACE assumed that the solar matter was originally spread out over a very wide space, which extended beyond the outmost planets. There, according to KANT, were formed planets by the aggregation of masses of matter; according to LAPLACE, by separation out of the rotating mass as the result of centrifugal force. SWEDENBORG on the other hand had assumed that the solar vortex never had so great an extension. The planets had been formed by a centrifugal force depending upon a continually increasing vortical motion of the solar mass, as a result of which its outmost parts were separated and cast out, having drawn themselves together into globes corresponding to the present planets and moons of the planetary system. Afterwards these heavenly bodies had been gradually borne away from the sun to the positions they now occupy. There they are drawn along by the solar vortex like ships by flowing water. A similar view concerning the departure of the planets from the sun was also later expressed by BUFFON, but he differs from SWEDENBORG in this, that BUFFON assumed a concussion caused by a comet which by breaking in from outside and striking the sun gave occasion to the casting out of shattered portions of it. In recent times, however, the famous English astronomer G. H. DARWIN has expressed a view concerning the removal of the planets from the sun by means of the influence of the tides. This influence acts as a brake upon the central body, by means of which the planet circling around it is lif-

ted from the centre of its path. The rotation energy of the central body is thus changed into potential energy in the planet. Thus the planet's time of revolution is increased. In the same way the moon has been lifted up from its central body the earth, whose speed of rotation has thus been decreased, so that the length of a day has much increased. The tides have therefore had the double influence of lengthening the day as well as the year.

These two statements are found to be already strongly advanced by SWEDENBORG, although he did not know that the influence of the tides could be adduced as a cause.

Between the times when DESCARTES and SWEDENBORG appeared upon the scene falls the period in which NEWTON made his remarkable discovery of the universal gravitation (1686). This led to the admission that space is empty, since it does not offer any resistance to the movements of the planets and moons. Another consequence was this, that it is now generally supposed that bodies act upon each other at a distance by gravity. This conclusion, however, was something so antagonistic to the conceptions of the time as inherited from the old philosophers, that NEWTON himself sharply expressed his opposition to it. This no doubt occasioned that NEWTON's views, notwithstanding their surpassing advantages, were for a long time unable to make themselves valid outside of England, to VOLTAIRE being due the honor of having obtained for them an entrance into France and on the continent as a whole (1730). It is rather likely that also SWEDENBORG was for the above mentioned reason deterred from employing NEWTON's law as the basis for his cosmological reflections. This was reserved for the great scientist BUFFON (the well-matched rival of LINNAEUS).

KANT's attempts, however, made after those of BUFFON, show far greater kinship with SWEDENBORG's. KANT's attempt was finally succeeded by LAPLACE's celebrated nebular hypothesis, in its turn also suffering from essential defects which later times have attempted to remedy.

There is also another cosmological speculation in SWEDENBORG's work which is of importance. The Pythagoreans of antiquity taught that the expanse of heaven has a similar extension in all directions and consequently is spherical. The middle point of the sphere is occupied by the central fire, an hypothetical heavenly body, in many respects corresponding to the sun, which also later replaced the central fire as the middle point of the world. Notwithstanding that this view of the sun's central position was the prevailing one, and is for example accepted by

Kopernikus, there was not lacking even in ancient times another opinion, presumably first expressed by Demokritos, the greatest natural philosopher of antiquity, which opinion was this, that the sun is similar in rank to the stars. He also held that the milky way is a collection of sun-resembling stars. Neither did Giordano Bruno consider the sun to be the middle point of the world, but similar in rank to the other stars. This view was also afterwards expressed by Descartes and Swedenborg. Swedenborg added a remarkable expression concerning the system of the milky way, which has afterwards in a somewhat changed form been taken up by a number of authors in the field of cosmology. He had, like Descartes before him, been much occupied by those lines around a magnet called by us lines of force, which he believed depended upon emanations of magnetic matter from the magnet. Such conceptions are already found in Lucretius, who probably borrowed them from Demokritos, as also in a highly developed form in Descartes. The lines of force lie most closely together around the axis of the magnet, with which when most nearly adjacent they run parallel. Now Swedenborg supposed that everything in the world is constructed according to a common plan. Therefore the arrangement of the least parts of the magnetic matter should be mirrored in that system of order which ought to prevail between the suns. Now since the suns are seen to be packed most closely along the milky way, it follows that this ought to correspond to an axis in the system of the suns. Swedenborg has not expressed himself concerning the remarkable circumstance that this axis should likely be straight, in which case the milky way ought to look like a semicircle in the sky. But instead this arrangement forms a closed belt around the vault of heaven. One can certainly also suppose magnetic lines of force which form a circle, as for example in a ring-shaped magnet, and we may form a picture of the milky way in this manner, but it would be peculiar if Swedenborg had not mentioned that he had such a thought in case he really did think of this possibility. This explains why Nyrén[1], who has expressed himself in regard to Swedenborg's view of this matter, considered that it must be supposed that Swedenborg by »axis» meant something quite different from other authors, namely, »aequator». If this had been the case, Swedenborg's opinion would have closely agreed with that which was expressed sixteen years later, and probably independently, by the Englishman

[1] See *Vierteljahrschrift der Astronomischen Gesellschaft*, 1879. — The contribution of Professor Nyrén will follow in this series of papers. — Ed.

Wright, who considered the milky way as corresponding to the ecliptic of the system of the suns. Kant was delighted with Wright's thought and took it up, without, however, according to Nyrén's opinion — Nyrén having had access to the exceedingly rare work of Wright — having added anything essential to it.

Swedenborg also expressed the opinion that there are still greater systems in which the milky ways are elements, and so forth. This opinion closely agrees with a view, highly valued by many, expressed by Lambert in his »Kosmologische Briefe», of the year 1761.

If we briefly summarize the ideas, which were first given expression to by Swedenborg, and afterwards, although usually in a much modified form — consciously or unconsciously — taken up by other authors in cosmology, we find them to be the following:

The planets of our solar system originate from the solar matter — taken up by Buffon, Kant, Laplace, and others.

The earth — and the other planets — have gradually removed themselves from the sun and received a gradually lengthened time of revolution — a view again expressed by G. H. Darwin.

The earth's time of rotation, that is to say, the day's length, has been gradually increased — a view again expressed by G. H. Darwin.

The suns are arranged around the milky way — taken up by Wright, Kant and Lambert.

There are still greater systems, in which the milky ways are arranged — taken up by Lambert.

What now is the value of the cosmological principles in general? To this question many very differing answers are given. To indicate this we may refer to the widely differing recognitions of Kant's cosmological work which have been made in various quarters. Du Bois Reymond says that »with Kant ends that series of philosophers who were in complete possession of the scientific knowledge of their times and who participated in the work of scientists». That this view is untenable, is clear from H. L. Vogel's expressions: »If one now make allowance for this fundamental error, (that Kant supposed the circling movement of the planetary system not to have existed from the beginning, but to have gradually developed itself), Kant's theory contains so many errors and difficulties in particular points, that it now actually is without any value». These difficulties and errors are, however, of such

a nature that they should have been apparent even in KANT's time to a man schooled in the laws of mechanics — as all the essential principles of mechanics were already known at that time.

The great HELMHOLTZ also regards KANT's cosmology as being of high value. He says of it »that it together with a series of the most happy thoughts sped far ahead of his times». It can scarcely be supposed that the acute HELMHOLTZ made so cursory an examination of KANT's »Naturgeschichte und Theorie des Himmels» as not to have discovered the grievous errors in the laws of mechanics which are incident to practically every portion of this work. We must therefore suppose that HELMHOLTZ considered KANT's cosmological speculations as having a very high value even although their execution on the mechanical side is untenable. This, namely, is quite supposable, for the cosmological speculations have a philosophical side which is of at least as great significance as their mechanical side. So, for example, we find in the cosmological ideas of GIORDANO BRUNO, which must indeed be described as belonging to the most remarkable in the world's history, no new mechanical considerations at all which are of any value. He has taken up the view of ARISTARCHOS and KOPERNIKUS that the earth moves around the sun; he furthermore expresses the grand thought that the earth is but a diminishing little particle in infinite stellar space, since innumerable stars are like our sun surrounded by circling inhabited planets — already 150 years earlier NICOLAUS CUSANUS had for the rest expressed the view that other heavenly bodies are inhabited — and he vehemently rose up in opposition to the prevailing astrological superstition, which lamed scientific investigation, the view, namely, that not only the sun, but also the heavenly bodies, exercise a powerful influence upon events on the earth and especially on men. It is hardly possible to express cosmological opinions of a more deeply reaching significance, and still no principles of mechanical learning enter into them. BRUNO also had to pay with his life for his daring defiance of the reigning, and as we now know, altogether false views of the time. He was in truth far ahead of his times.

To those who have valued KANT very highly belong furthermore the ingenious but in high degree eccentric German astrophysicist ZÖLLNER, and in later times EBERT in connection with the edition of KANT's above mentioned work edited by him in OSTWALD's »*Klassiker*». Here belong also HAECKEL and C. WOLF. For the rest later scientific investigation is rather united in depreciating the value of KANT's work, as for example DÜRING in his *Kritische Geschichte der Principien der Mechanik* (1873), Count L.

Pfeil (1893), Eberhard (Dissertation, Munich, 1893), Gerland (1905), Holzmüller (1906) and Hoppe (1906), and it may be added H. L. Vogel in Newcomb-Engelmann's *Populäre Astronomie* (1905).

All of the above mentioned authors have considered Kant's work from the mechanical standpoint and have not concerned themselves with the great leading ideas in their general scope. On the other hand a philosopher König has in his work »Kant und die Naturwissenschaft» (1907) ranked himself on the other side. C. Wolf also emphasizes the thoughtful poesy — *i. e.*, the philosophical depth — in Kant's expressions. Haeckel has also without doubt permitted himself to be guided by a philosophical (monistic) manner of treatment in his »Natürliche Schöpfungsgeschichte».

It is therefore explained why the cosmological thoughts may be called grand and wonderful, as for example Kant's thoughts in this field, although their execution does not agree with the laws of physics. Not even the great master in the field of celestial mechanics, Laplace, has completely escaped this fate. It is now recognized by all that his so highly praised nebular theory in many points conflicts with the laws of mechanics, although it indeed in that respect is far better than Kant's attempt. And besides it is in conflict with various astronomical and physical discoveries, among which at least one, that of the direction in which the moons of Uranus revolve, was made when he was still in his prime. There is however no one prepared to deny that this cosmological work of Laplace, although it demands working over in almost all details, nevertheless belongs to the most important scientific works which have been executed.

To take another example, one of Kant's predecessors in antiquity, the famous natural philosopher Anaxagoras, taught that the original chaos had been gradually arranged in order, so that the heavenly bodies which now exist were formed, that the sun was an enormous glowing lump of iron and that the other stars were also glowing by their rubbing against the surrounding ether. Most thinkers are no doubt disposed to regard his expression that the sun is made of iron as a worthless curiosity. I however permit myself to entertain an altogether different opinion as to this point. Spectrum analysis has taught us that iron probably constitutes a most essential part of the sun's matter. Observation of the constitution of metallic meteorites teaches us that iron is without comparison the most important metal in them, and from various considerations we view it as probable that the earth's chief mass is iron.

Anaxagoras was therefore right, according to all that we know. That he conceived the sun as consisting of iron depended without doubt upon his being led by some circumstance to the important conclusion that iron plays the chief rôle in inorganic nature. This was a stroke of genius and hardly an accident. In like manner would a superficially judging scientist shrug his shoulders on hearing the naive view that the stars are glowing because they rub against the ether. We know indeed that this does not at all agree with the view of our times. But I maintain nevertheless that under this formally incorrect view is hidden one of the greatest thoughts ever expressed. Scarcely one hundred years ago most astronomers, and among them the leaders, as Herschel and Laplace, had no idea that the sun required any storehouse from which it might draw the enormous quantities of heat which it pours forth, partly in the form of light. They did not reflect concerning this question. On the other hand Kant as a philosopher did this, and also Buffon and many others before him, but among all known philosophers Anaxagoras was probably the first to do so. He could not suppose that the stars ought not to have become extinct long ago on account of loss of heat, had not heat in some way been sustained. The mechanical part of the above mentioned conception of Anaxagoras is untenable, but the idea is nevertheless grand.

Now it is very striking that all those who before Laplace made contributions to the development of the cosmological ideas were natural philosophers, possibly with the exception of Buffon and Descartes who were also scientists of note. But it is no doubt most correct to consider their cosmological works as being for the most part natural philosophy. The same is also true of Swedenborg's work in that he labored but little in working out in physics his widely comprehensive and most remarkable ideas.

A question still remains to be explained, and that is to what extent Swedenborg's ideas have formed the basis of the works of his successors. That one among them who agrees most closely with Swedenborg is Kant, of whom it is well known that he had applied himself to Swedenborg's works. Kant himself says in 1766 that Swedenborg as if by inspiration had discovered scientific relationships which Kant had only been able to explain after many and lengthy investigations. It is for those who compare Kant's speculations concerning inhabited worlds in his above mentioned work with Swedenborg's accounts of his visions quite manifest that Kant has borrowed his ideas from Swedenborg and clothed them in more philosophical garments. It is therefore not improbable that he has also

in other parts of the same work been under SWEDENBORG's immediate influence and worked over his ideas. On the other hand it does not seem as if WRIGHT had known SWEDENBORG's similar thoughts. I cannot express myself more decidedly since I have not had access to the original, but it would appear as if NYRÉN considered WRIGHT's work to be independent of SWEDENBORG's. As concerns BUFFON, it is known that he possessed SWEDENBORG's *Principia* in 1736 and it is indeed possible that he was led to his cosmological speculations through SWEDENBORG's work. But BUFFON's views differ in high degree from SWEDENBORG's, so that it would be incorrect to hold that he derived any great service from SWEDENBORG's opinions. There is indeed no doubt that BUFFON knew the vortical theory of DESCARTES, which was at that time generally promulgated in the universities, which theory BUFFON's views resemble as little as they do SWEDENBORG's. LAPLACE knew BUFFON's views, but hardly KANT's and still less SWEDENBORG's.

The chief interest in SWEDENBORG's cosmological conceptions lies in this, that they form a link between the cosmological conceptions of the ancient philosophers and of DESCARTES on the one side and those of KANT on the other side. Similarly to the conceptions which they connect, SWEDENBORG's are little developed in the mechanical direction, so that the chief weight must be laid on their natural philosophical part.

That SWEDENBORG himself considered his *Principia* to be chiefly of philosophical content appears not only from the introduction »on the means which lead to true philosophy and on the truly philosophical man», but also especially from the Appendix,[360] where it is emphasized that his system is built of the concepts »finita», »activa», and »elementaria». He says that he has not published his work to win the favor of the learned world, or a name or fame, neither will it concern him if no one will give recognition to his work — in this respect he takes an entirely different position about six years before in the hitherto unprinted *Principia*. A man who is striving to find the truth of philosophy does not concern himself as to such things. »Neither do I wish to ask anyone to depart from the principles of the illustrious and ingenious authors and to accept my own, wherefore I have not wished to refer to the philosophy or name of anyone, in order not to wound anyone or to contradict another's opinion and not to appear to wish to in any wise diminish his renown». »Truth is one and speaks for itself.»

He however refers to a single philosopher, remarkably enough none more significant than CHRISTIAN WOLFF, who »has contributed much to

the extension of true philosophy». To him SWEDENBORG expresses great thankfulness for the use he has had of WOLFF's works in the revision of the *Principia*. It has however not been possible for me after comparing it with the works of WOLFF referred to, to find those parts of SWEDENBORG's presentation in which he has permitted himself to be influenced by WOLFF's views, excepting in the use of certain terms.

One must admit that it is a grand thought to attempt to furnish an explanation of the world according to which a complete harmony reigns between the greatest and the least — the stellar system and the atom — or even according to SWEDENBORG's conception with its least part, the material point. It can also be easily understood why SWEDENBORG, who believed that he had happily solved this problem, felt the deepest satisfaction in a work which had occupied so large a portion of his life.

TAB. I. Princip.
Fig: 1.
a
b
c
d
e
f
Fig: 2.
h
k
Fig: 3.
b
c
f
Fig: 4.
m
n
p
Fig: 5
n
o
p
r
t
m
u
y

TAB. II. Principp.

Fig: 1.

Fig: 2.

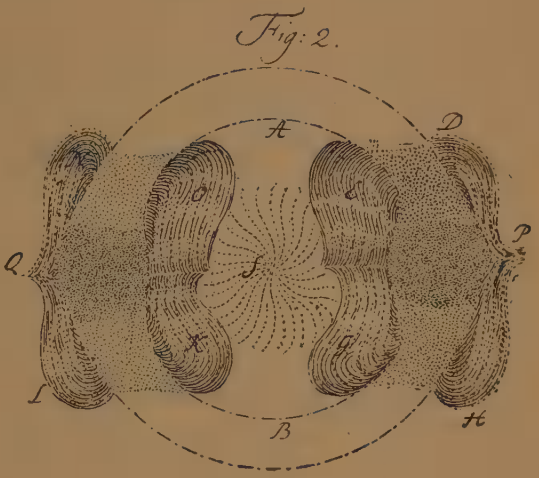


Fig: 3.

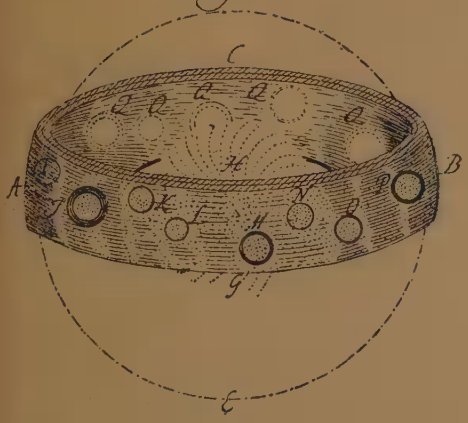
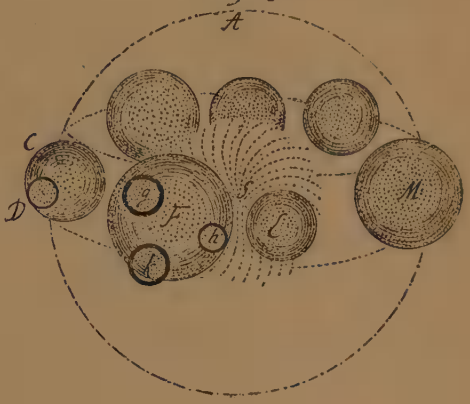
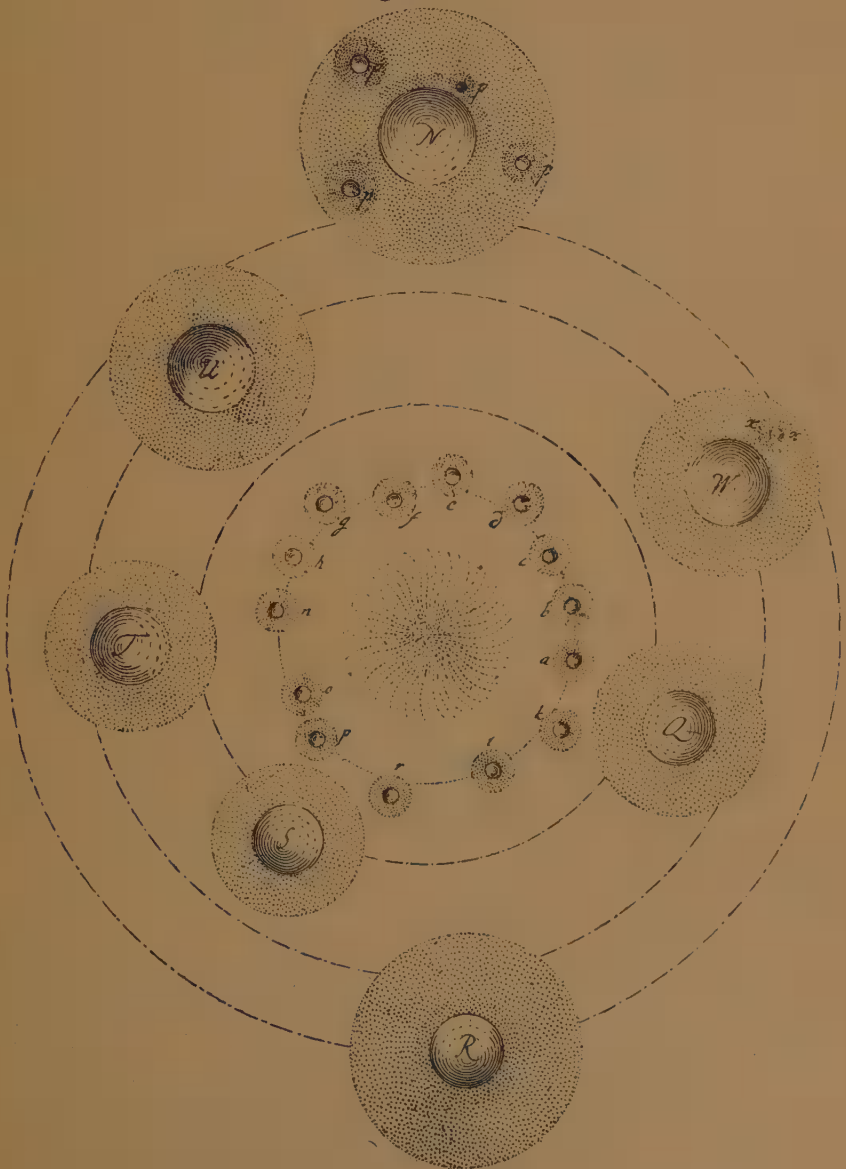


Fig: 4.



TAB. III. *Princip:*

Fig: 5.



TAB. IV. Principp:

Fig: 18.

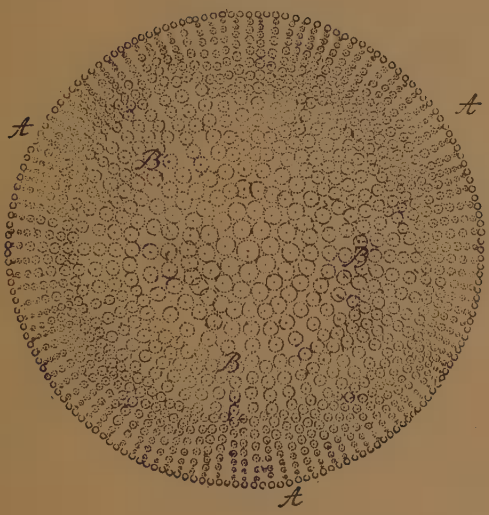


Fig: 20.

Fig: 19.

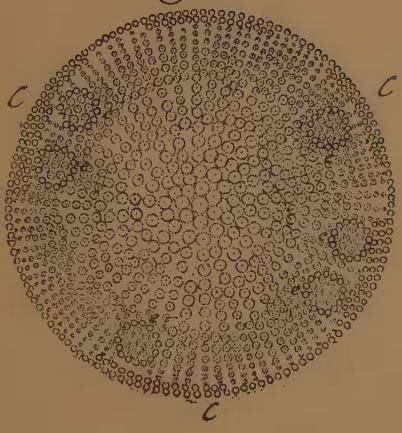
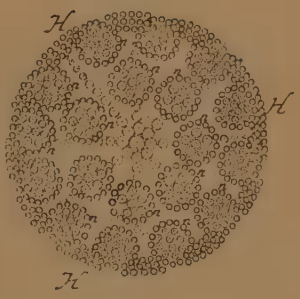


Fig: 21.



THE SOURCES OF SWEDENBORG'S EARLY PHILOSOPHY OF NATURE

BY

ALFRED H. STROH

STOCKHOLM
AFTONBLADETS TRYCKERI
1911

13-25852

THE SOURCES OF SWEDENBORG'S EARLY PHILOSOPHY OF NATURE

BY *ALFRED H. STROH.*

The Cartesian Controversy which raged at the University of Upsala from 1663 to 1689 forms the proper historical background for SWEDENBORG'S early investigations in the field of the natural sciences. It will therefore be best in the present discussion of the sources of SWEDENBORG'S early philosophy of nature, in the course of which the relation of his investigations to those of DESCARTES, NEWTON and POLHEM will be considered, first briefly to describe the course of the Cartesian Controversy at Upsala and its influence upon the founders of that scientific movement at the University which in 1710 was organized as the *Collegium Curiosorum* and subsequently developed into the Royal Society of Sciences of Upsala.

The Cartesian Controversy at Upsala University, 1663—1689, and its influence upon the founders of the Royal Society of Sciences of Upsala, first organized in 1710.[1]

The inner history of Sweden after the Thirty Years' War exhibits a series of changes affecting in a fundamental manner the politics, social

[1] See an address on »The Cartesian Controversy at Upsala, 1663—1689, and its connection with Swedenborg's nebular hypothesis», in *Verhandlungen des III. Internationalen Kongresses für Philosophie, Heidelberg, 1908*», pp 248—255. The same volume also contains, pp. 241—246, a contribution entitled »Relics of Descartes' visit to Sweden,

order and intellectual standards of the whole people. Queen Christina, the gifted daughter of the great Gustavus Adolphus, adorned her court by inviting to it many learned and talented men from the Continent, among them the philosopher Descartes. But for the premature death of Descartes, the Queen would have established an Academy of Sciences at Stockholm, which might have ameliorated the severity of the intellectual changes whose advent during the latter half of the seventeenth century was accompanied by so much controversy and animosity at the University of Upsala. The final outcome was the establishment of philosophical freedom and of untrammeled scientific research. Strangely enough, Charles XI., whose political power was well nigh absolute, a power built upon the ruins of the authority of the nobles, exercised a determining influence upon the great controversy at Upsala in the direction of increased freedom of discussion and liberty of teaching. The occasion of the difficulty was the entering of Cartesianism into the Faculty of Medicine, but as the discussion proceeded its scope extended, involving the remaining Faculties of Philosophy, Law and Theology in a general controversy concerning the relationship of theology, philosophy and the sciences.

It appears improbable that the short residence of Descartes at the Swedish capital was accompanied by any events which were directly connected with the subsequent controversy at Upsala, although it is known that the learned were opposed to the foreigner Descartes, just as they were opposed to the other foreigners at the court. Queen Christina was so much affected by the philosophy and personal history of Descartes that not long after his death she ordered that no priest should be granted a professorship in the Faculty of Philosophy at Upsala; Descartes had recently suffered from persecution in Holland.

---

especially a newly discovered portrait by David Beck». The account of the Cartesian Controversy and its influence upon the founders of the Scientific Society at Upsala and upon Swedenborg, furnished in the present Introduction, is based in part upon the author's investigations and in part upon the admirable works of Dr. Claes Annerstedt, former librarian of Upsala University. See his »Bref af Olof Rudbeck den äldre», Upsala, 1893—1905, and »Upsala Universitets Historia», Vol. II., 1908—1909. The valuable article of Svedelius in the periodical »Frey», 1842, as also Baillet's »La Vie de M. Descartes», besides many other sources, have been consulted. More detailed information, with full references to the literature illustrating the Cartesian Controversy and its effect upon the intellectual atmosphere at Upsala will, it is hoped, appear in a monograph to be published at Stockholm.

The University of Upsala was founded in 1477 and was naturally saturated with the theology and scholastic philosophy which then prevailed. ARISTOTLE reigned supreme in the philosophical camp except for the inroad which had been made by the anti-Aristotelian doctrine of RAMUS. The Cartesian Controversy began in the Faculty of Medicine, where the first Cartesian in Sweden, OLAUS MARTINI STENIUS, had been Professor. He was the teacher and predecessor of the famous anatomist and author of »Atlantica», OLOF RUDBECK. Professors RUDBECK and HOFFWENIUS, both of the Faculty of Medicine, had studied in Holland, where DESCARTES had spent twenty years of his life and acquired a great influence. In 1663, in connection with a disputation of HOFFWENIUS, the rumor began to be spread that Cartesianism had entered Upsala, which led to complaint on the part of the priests, in session at Stockholm. That the Cartesian movement met with opposition is also shown by some lines which a teacher in Linköping sent to Upsala by the hands of some departing students. He wrote: »Would that the atoms, pores, and effluvia of the sun might not obtain too great a dominion in your academy, so that the young men are drawn away by the desire for novelty from the useful and ancient manner of philosophizing, so that when returning to their parents they cause more pain than honor, not knowing anything else but how to prattle about atoms, etc.» Although there was not lacking sympathy in the Consistory with this complaint, it was nevertheless felt that such an admonition was rather strong and that it was produced by »*imbeccilitas animi*», so the Rector was instructed to give the author, ANDREAS AJALINUS, a »scrape». The discussion concerning Cartesianism might not have become so acute during the early period of the controversy had not some of the professors been prepared to welcome an opportunity for revenging themselves upon OLOF RUDBECK, who had shown himself to be an unflinching enemy of laxity and incompetence.

All the prominent representatives of the revolutionary Cartesianism were professors in the Faculty of Medicine, and when Professor HOFFWENIUS in a disputation gave evidence that Cartesianism had entered the University, the House of Priests took up the question in the Parliament of 1664. The proposal that the lectors of physics in the gymnasia should also be medical men was rejected, and for the reason that most of them were Cartesians. A deputation of priests was sent to the Chancellor, MAGNUS GABRIEL DE LA GARDIE, to prevail upon him to pre-

vent the youth at Upsala from promiscuously hearing »subtilities, even perhaps such as they do not understand, like the Cartesian philosophy, whose authors say that things of faith are probably set forth by the Holy Spirit, but not so matters in physics, chronology, etc., which are determined by the opinion of the multitude». The Chancellor was not pleased by this advice, practically a criticism of his government of the University, where the news of the proceedings against Cartesianism was received with much displeasure, RUDBECK saying that but few had read DESCARTES' philosophy and that none of the students understood it. But not long after one of the students, URBAN HJÄRNE, later known as an enlightened scientist, and the chief of a chemical institute, defended another disputation by HOFFWENIUS, the Cartesian tendencies of which were found to be so obnoxious to the theologians that a long discussion followed, which, however, did not lead to a decisive victory for either party. HOFFWENIUS refused to have his disputation altered, the theologian STIGZELIUS and his supporters refused to have it ventilated unless altered, and finally both parties rested on their arms, although personal friction continued. One of RUDBECK's disputations had also been found too Cartesian and the attacks against him for this and other reasons did not cease.

After a truce, extending from 1668 to 1686, during which Cartesianism made steady progress at Upsala among the teachers, the controversy broke out anew. The House of Priests, influenced by the Upsala theologians, approached the King, CHARLES XI., with a written application, the spirit of which was to prevent the study and dissemination of DESCARTES' teachings at the University. Among the means proposed to accomplish this purpose the following sufficiently indicate what drastic steps were resolved upon. It was advised that the Theological Faculty should be placed in a position of censorship over the whole University, and not only that the Cartesian philosophy should be forbidden, but that the study of the Aristotelian philosophy should be encouraged by special support, and that no stipends should be granted except to those who accepted ARISTOTLE's philosophy. All disputations, as well as the authors in philosophy to be lectured upon, were to be passed upon by the theologians. Finally, all disputations, and also all books from foreign countries, were to be admitted only after having been passed upon by a censor. In order to crush Cartesianism in its former stronghold, the Faculty of Medicine, it was proposed that the professorship

of physics, which had been placed in that department by the Constitution of 1655, should be removed therefrom, and placed in the Faculty of Philosophy, and the chair occupied by a loyal Aristotelian.

The discussion was not so much concerning the principles of Descartes' philosophy as concerning the limitations to be imposed upon the leaders of the dawning natural sciences, who, basing themselves upon experiments and the principles of Descartes were demonstrating the laws of nature from its own phenomena, thus destroying the structure of Aristotelian Scholasticism not only in the field of the natural sciences, but even in that of theology itself, thus endangering religion.

If Charles XI. thought to pour oil upon the troubled waters by sending the accusations of the priests to the accused party, the University, the results were certainly discouraging. The Theological Faculty was opposed by all the remaining Faculties. Rudbeck's influence in the Medical Faculty was strongly in support of Cartesianism, which had also found a powerful supporter in the Faculty of Philosophy in the person of Johannes Bilberg, Professor of Mathematics. The King had sent the accusations to the University in January, 1687; all the Faculties had replied by May. The King permitted the matter to rest for two years, possibly to await the assembling of the next Diet, which met in 1689. The whole question was then placed in the hands of a committee of five statesmen, who, after hearing the evidence, recommended what was in form a compromise, but in actuality a rejection of the accusations against Cartesianism. On the 17th of April, 1689, the King rendered a formal decision that the doctrines of the Christian faith might not be subjected to philosophical criticism, but as for the rest philosophy should be free in practice and discussion. The controversy at Upsala continued for years after the decision, but the crisis had passed. Bilberg was removed from the Faculty of Philosophy, and, that peace might be restored, was appointed Professor of Theology! The appointment, however, failed to restore peace. Not only was further fault found with his philosophical position as set forth in two theological disputations, but another Cartesian, Eric Castovius, was also subjected to severe criticism on account of a disputation, which had been passed upon by Bilberg. But the fundamental question of freedom of discussion and teaching had been answered by the King's decision [1].

[1] After further friction Bilberg was finally appointed to a pastorate at Örebro and died as the well beloved Bishop of Strengnäs diocese. One of his students, who

The general results of the controversy were greater freedom of thought and a direct stimulus to unfettered philosophical and scientific research. In 1710 the Royal Society of Sciences of Upsala was organized and counted among its members during the century such men as SWEDENBORG, CELSIUS and LINNÆUS. The direct influence of the Cartesian philosophy upon the founders of the Society will be discussed below.

In the case of SWEDENBORG the influence of the Cartesian Controversy soon appears upon examining his early scientific writings. He also refers favorably to DESCARTES in connection with some remarkable theories in physiological psychology, and even in his later theological works, in a treatise »De Commercio Animae et Corporis», (1769), which reports a discussion in the spiritual world by the followers of ARISTOTLE, LEIBNIZ, and DESCARTES, the Cartesians are victorious. We must, however, here confine the discussion to the early scientific works of SWEDENBORG, which are chiefly of geological, physical and cosmological content.

Beginning with mathematical, physical, chemical and mechanical researches, partly published in the »Daedalus Hyperboreus», the earliest scientific magazine of Sweden, edited by SWEDENBORG at Upsala, 1716—1617 [1], the young investigator applies himself to geological questions at a time when geology as a science did not exist, and makes a number of remarkable discoveries which have been discussed in detail by A. G. NATHORST in the Introduction to Vol. I. of this series. SWEDENBORG was also deeply interested in astronomy, and when his early studies had been reported in a series of publications which appeared from 1716 to 1722, we find him turning his attention during the next decade to general cosmological problems. At the same time he was collecting information concerning the metals and smelting processes, in connection with his duties as an assessor in the Royal College of Mines. The results of his work were published in 1734 at Dresden and Leipsic in three folio volumes entitled »Opera Philosophica et Mineralia», printed in handsome style by the munificence of the Duke of Brunswick-Lüneburg. The first volume contains the »Principia Rerum Naturalium», the second and third are works on »Iron» and »Copper» [2].

---

followed him to Örebro, the Cartesian psychologist ANDREAS RHYDELIUS, subsequently professor at the University of Lund, kept alive the flame which his teacher had so zealously guarded. RHYDELIUS was the uncle and educator of NILS RETZIUS, the father of ANDERS JAHAN RETZIUS.

[1] The DÆDALUS will be published in Vol. IV. of this series.

[2] The three volumes of the »Opera Philosophica et Mineralia» will be included in the present series.

The »Principia» has been the subject of some discussion by astronomers and cosmologists, most recently by S. Arrhenius in the Introduction to Vol. II. of this series. The early physical philosophy of Swedenborg gradually developed into more and more abstract theories of the origin of matter, its composition and motions, culminating in the philosophical and metaphysical introductory chapters of the »Principia» and in the »Prodromus de Infinito».

Among the evidences which indicate the influence of the Cartesian Controversy upon scientific and philosophical investigations at Upsala is the fact that most if not all of the founders of the Scientific Society, first established in 1710 as the *Collegium Curiosorum*, were Cartesians. We have certain knowledge that this is true of nearly all of the founders, of Lars Roberg, Pehr Elvius, Harald Wallerius, and of his son Johan Wallerius; and probably his brother Göran, as also Olof Rudbeck, Jr., should be included in the list of Cartesians. On account of the pest at Upsala in 1710, Swedenborg's brother-in-law, Eric Benzelius, Jr., invited several of the professors of the Faculties of Philosophy and Medicine, in which it will be remembered the principles of Descartes had found their most ardent supporters, to meet at the University Library once or twice a week in order to discuss literary and scientific subjects. Benzelius, the chief founder of the Society, was at that time the University librarian. His influence upon Swedenborg will be discussed below [1].

Some of the interesting information illustrating the early history of the Society is summarized by one of its secretaries, Erik Prosperin, the professor of astronomy at Upsala, in an »Address concerning the Royal Scientific Society of Upsala», [2] delivered before a meeting of the Royal

[1] In later years Benzelius became bishop of Linköping and shortly before his death Archbishop of Sweden, an office which had been filled by several members of the talented Benzelius family. A brilliant and versatile scholar, and the greatest librarian Upsala University had known since its foundation in 1477, Benzelius played a most important rôle in the intellectual history of Sweden during the early decades of the eighteenth century. The Diocesan Library at Linköping, greatly enriched by the activity of Benzelius, contains some twenty volumes of the family correspondence and most of Swedenborg's earliest manuscripts and letters, as well as other manuscript matter illustrating the history of the *Collegium Curiosorum*.

[2] »Tal, om Kongliga Vetenskaps Societeten i Upsala; hållet för Kongliga Vetenskaps Academien, vid Praesidii Nedläggande den 18 November 1789, af Erik Prospe-

Swedish Academy of Sciences at Stockholm on the occasion of his leaving the presidency of that body in 1789. PROSPERIN says: »The pest in 1710 had driven the youth from the seat of learning at Upsala, on account of which the customary lectures for a time ceased. In order to be able, in this idleness, to forget, at least for some moments, the lamentable objects which met the eyes and thoughts on all sides, Dr. Erik Benzelius, Jr., who was then Librarian of Upsala Academy, persuaded some of the most famous men of the place to meet once or twice a week in the Royal Academy's library in order to discuss literary matters and to correspond with Christopher Polhem and Emanuel Swedberg, both of whom are among the most renowned men our country has ever produced. Everyone knows that the former was without a rival in his subject. The latter was in younger years one of those who worked with the greatest diligence and the best success in spreading useful sciences. . . . The persons in Upsala who constituted this Society were especially the Professors Harald Wallerius, Johan Uppmarck, Pehr Elvius, Olof Rudbeck, Jr., Lars Roberg, and the brothers Johan and Göran Wallerius. They called their society *Collegium Curiosorum*. It is not known whether they had determined upon special activities or adopted any rules. No complete record has preserved to our time what was considered at their meetings. It is only known that the *Dædalus Hyberboreus*, which was published by Herr Swedberg during the years 1716, 1717, 1718, is a fruit of their labors, and should therefore be regarded as the Royal Scientific Society's first »Proceedings». From the subjects which are there found treated, and from other considerations, it may be concluded that mathematics, physics, economy, and astronomy were the main subjects of the investigations of this Society».

When the University Constitution of 1655 was adopted, the formation of »nations», or clubs of students from the various provinces of the country, was strictly forbidden, but they were nevertheless formed some

---

rin, Kongl. Astronom. Observator, Kongl. Vet. Societetens i Upsala Ledamot och Secreterare.» Stockholm, 1791.

Besides the above the student should consult the following publications: »Kongl. Vetenskaps-Societeten i Upsala. Dess stiftelse, utbildning och verksamhet», by J. H. SCHRÖDER, Upsala, 1845; the »Essai sur la Société Royale des Sciences d'Upsal et ses rapports avec l'Université d'Upsal», by O. GLAS. Upsala, 1877, and the recently issued festival publication of the Society, edited by its perpetual Secreterary NILS DUNÉR: »Kongliga Vetenskaps Societetens i Upsala Tvåhundraårsminne MCMX.»

years later. The first inspector of the Westmanland-Dala nation was Olof Rudbeck, Sr., the professor in the Faculty of Medicine who had defended the revolutionary Cartesian philosophy. Since Olof Rudbeck lived until after the great fire at Upsala in 1702, and was a next-door neighbor of Jesper Swedberg, it is likely that Swedenborg received some impressions from this great scientist and investigator. We know that Jesper Swedberg's inclinations were not in the scientific and philosophical direction, but he himself says that he permitted his children freely to choose their own occupations. In his disputation thesis Swedenborg addresses his parent in terms of loving, filial respect, but they do not seem to have stood very near one another in the following years. Swedenborg's steps were not taken in the theological path; he himself afterwards recorded that he was kept from reading works on dogmatic theology, and his work in the Faculty of Philosophy at Upsala no doubt consisted for the most part of a thorough study of the classics and of some branches of mathematics and the natural sciences. Perhaps he also did some work in the Faculty of Medicine, for the professorship of physics, which in those days included the major part of the natural sciences, was in the Medical Faculty. More detailed information as to the professors, subjects, and text-books of the period 1699—1709 is found in the large printed folio sheets which in those days constituted the University Catalogue. It seems likely, if we may judge from certain expressions in Swedenborg's earliest letters, written soon after he left the University, that his teachers were among others the following professors in the Faculty of Philosophy: the professor of mathematics, Harald Wallerius; the professor of astronomy, Pehr Elvius; and the Schyttean professor of elocution, Johannes Upmark, afterwards ennobled with the name Rosenadler. He also praises the professor of theoretical and practical medicine, Lars Roberg. In passing it may be mentioned that there is an oil portrait of Professor Wallerius at Upsala showing him with one arm resting upon a volume of Descartes; and that the works of that philosopher were still studied during Swedenborg's stay at the University appears from the catalogue of 1708, which records that the professor of theoretical philosophy, Magister Fabianus Toerner, under whose presidency Swedenborg disputed the following year, lectured on Aristotle's Logic compared with Descartes'.

Swedenborg was a student at the University of Upsala from 1699 to 1709. He then spent a few months at the episcopal residence, Brunsbo,

near Scara, with his father, Bishop JESPER SWEDBERG, before leaving Sweden in 1710 on a journey to England. After a four years' visit in England and on the Continent, SWEDENBORG arrived in Swedish Pomerania in 1714 and returned to Sweden in 1715. He seeks in vain a secretaryship at Upsala[1], but is introduced by POLHEM to CHARLES XII., at Lund, and is appointed extraordinary assessor in the Royal College of Mines. SWEDENBORG is now fairly established; he discusses mathematical and scientific subjects with the King, assists POLHEM in various engineering enterprises at Trollhettan and Carlskrona, and continues the scientific studies which he had begun before returning to Sweden. Beginning with mathematical, mechanical, and astronomical studies, he proceeded with physics, chemistry and geology, and then after writing and partly publishing a series of most remarkable works on those subjects, the last of which were the »Precursor of the Principles of Natural Things»,[1] 1721, and the »Miscellaneous Observations,» 1722, he devoted himself for twelve years to metallurgy and cosmology, publishing, in 1734, the three magnificent folios entitled »Opera Philosophica et Mineralia.» An analysis of SWEDENBORG's later philosophical, psychological, physiological and anatomical studies, based upon a comparison of his works of the period 1734—1745, whith the earlier series of the period 1716—1734, shows most clearly that the fundamental principles of his philosophy were worked out during the earlier period. The »Principia» is justly admired on account of the new cosmology it expounds, but many of the principles there laid down are found in the works published before 1722, although a close comparative study shows that great modifications were made from time to time and that some positions were gradually abandoned as the system developed.

The Relation of Swedenborg's Philosophy of Nature to the philosophies of Descartes, Newton and Polhem.[2]

It is certain that SWEDENBORG's interest in the natural sciences and philosophy had been powerfully excited before he left his Alma Mater

[1] Dr. CLAES ANNERSTEDT, the former librarian of Upsala University, has kindly furnished me with a copy of SWEDENBORG's application to the Rector and Consistory, preserved among the »Acta» of the Consistory for the year 1716.

[2] Much of the material employed in the previous sections, and in the remainder of this Introduction, has been submitted to the annual meetings of the Swedenborg Scientific Association of Philadelphia, U. S. A., and published in the quarterly of that body, »The New Philosophy», since 1901.

in 1709, and that it was his brother-in-law, ERIC BENZELIUS, who advised him to apply himself to those subjects, is proved by SWEDENBORG's remarks in his earliest letters to BENZELIUS, and in the dedication of the work »On the Infinite.» [1]

We shall not, at present, concern ourselves with an analysis of SWEDENBORG's early treatises on a variety of mathematical and scientific subjects, written and partly published before the year 1722, but rather attempt further to define with some precision the sources and development of his general philosophy of nature during this early period. An abundance of evidence shows that SWEDENBORG had great confidence in the work of ERIC BENZELIUS and CHRISTOPHER POLHEM, and that he admired and studied the works of DESCARTES, NEWTON, PUFFENDORF and RUDBECK. In the earliest work published by SWEDENBORG after leaving Upsala, — a »Festive Applause», printed at Greifswald in 1714 in commemoration of the return of Charles XII. from Turkey to Swedish Pomerania, — SWEDENBORG begins by referring to a doctrine of the Pythagoreans that all things develope in cycles, proceeding and then returning to the point of departure. The student of SWEDENBORG's works will find this doctrine developed from time to time, especially in the »Principia» and »Worship and Love of God». Again, in a short paper »On the Causes of Things», [229] — whether it be by SWEDENBORG or POLHEM we cannot be certain, perhaps it is the result of joint labor, the doctrines of a series of particles, differing in size and variously compounded, derived from the Infinite, and in vortices, may be traced quite clearly. These doctrines, greatly developed, reappear in the »Precursor» [1] of 1721 and

[1] In his first letter to BENZELIUS, written at Brunsbo, July 13th, 1709, thus only a few weeks after having defended his thesis at Upsala, and as we would term it today »graduated», SWEDENBORG mentions his plans for the journey to England, which had evidently been discussed before he left Upsala. He also refers to his plans for future study, proposing to choose a certain subject which might in time be completed. He has always desired to derive use and improvement from »the studies, which I selected with your advice and approval, my dear Brother». He shows his interest in Physics and »Natural History,» which in those days meant natural science and philosophy in general, and declares his intention to collect mathematical knowledge, also expressing his desire to have access to the mechanical inventions of POLHEM, before anything mortal happen to him. All these early dreams of SWEDENBORG were afterwards fulfilled, and in later years, after the publication of his »Opera Philosophica et Mineralia», he dedicates to his adviser BENZELIUS the »Prodromus de Infinito», referring gratefully to the valuable counsel of his early guide.

in the »Miscellaneous Observations» of 1722, and the culmination of their development, the theory of motion becoming more and more prominent, is recorded in the Second or Lesser »Principia», 1729, and in the »Principia» of 1734.

Among the theories which SWEDENBORG began developing as early as during his first visit to London, is that of finding the longitude at sea by means of lunar observations. His interest in this subject never waned, and we find him reprinting and circulating his early work on the subject even during the latter portion of his theological period, as late as 1766, when he was 78 years old. At the time when SWEDENBORG was first developing this theory in London he was studying the works of NEWTON, and discussing astronomical subjects with HALLEY and FLAMSTEED. Now if SWEDENBORG had accepted NEWTON's results, taken as a whole, he would have rejected the theory of vortices taught by DESCARTES, for NEWTON is opposed to the vortical theory and accepts a vacuum. SWEDENBORG, however, although he very early formulated a theory of round particles which differs from that of DESCARTES, never gave up the theory of various kinds of particles and vortices which DESCARTES had introduced into modern physics and cosmology, and which was in those days received everywhere, except in England, where the philosophy of NEWTON won the day long before it was accepted on the Continent and in Sweden. The condition in Sweden is well illustrated by the following question in a letter, dated the 28th of July, 1711, written by the astronomer, PEHR ELVIUS, to his former student, SWEDENBORG, during his visit in England. ELVIUS inquires as to »what the learned mathematicians think about NEWTON's principles of the motions of the planets, since they appear to be pure abstraction and not physical, namely, how one planetary body can gravitate towards another, etc., which seems to be absurd». Of this question SWEDENBORG says in a contemporary letter to BENZELIUS: »P. S. Prof. Elvius asks what is the opinion of Englishmen with regard to Newton's 'Principia,' but in this matter no Englishman ought to be consulted, because he is blind about his own (*quia caecutit in suis*); and it would be a crime to call them into doubt».

SWEDENBORG not only retained DESCARTES' theory of vortices, but also denied NEWTON's corpuscular theory of light and doctrine of the vacuum. DESCARTES also denied a vacuum, and it is well known that SWEDENBORG formulated a wonderful undulatory theory of light, very early ranking himself on the side of those who hold light to be a motion, namely,

Huyghens, Hooke, and others. As every student of the subject knows, the mechanical explanation of the law of gravitation presents great difficulties even today. I think it likely that Swedenborg came to the doctrines of the natural point and first element, set forth in his »Principia», as a result of these early studies during which he became thoroughly aware of the fundamental opposition between the philosophies of Descartes and Newton.

Another stream of thought into which Swedenborg was led during the first decade of his researches, that of the subdivision of matter into particles of various sizes, was derived from the theories of the ancient atomists, Democritus, Leucippus and Epicurus, and was introduced into modern chemistry and physics by Pierre Gassendi and Robert Boyle. But there are many proofs that Swedenborg also inherited much from the alchemists, and indeed chemistry was in his day far less advanced than were physics and astronomy.

Swedenborg's early standpoint with regard to the streams of thought to which we have just referred, namely, the Cartesian theory of vortices, the Newtonian conception of gravity and the vacuum, and the subdivision of matter into particles of various sizes, all combined to determine his future physical philosophy as developed in the »Principia» from 1721 to 1734. We find him in 1719, in the little work on the »Motion and Rest of the Earth and Planets»,[303] projecting a *Theoria Telluris,* with which he says the theories of Descartes and Newton must be compared. And still earlier, in 1718, in a letter to his brother-in-law, Eric Benzelius, Jr., Swedenborg had begun to develope his theory of round particles, subsequently presented in full as the »bullular hypothesis», in the »Precursor» and »Miscellaneous Observations,» and again with many additions and some modifications in the two »Principia» of 1729 and 1734. In the letter to Benzelius, dated January 30th, 1718, Swedenborg writes:

»Most honored and dear brother.

»I send you something new in Physics, upon the particles of air and water, proving them to be round, which may militate against the philosophy of many; but as I base my theory upon proofs and geometry, I hope that no one will be able to advance reasons for denying it. Preconceived ideas received from Descartes and others will probably furnish the greatest obstacles and objections. Dr. Roberg, who in everything that is minute and subtle is himself subtle, is best able to judge re-

specting it: if you would therefore be kind enough to leave this with him, I should like to hear his opinion. If Prof. Vallerius would lay aside a little his own and his dear father's Descartes, I would also like to have his opinion. This is a subject with which I might produce a large book, as is done by the learned abroad with their speculations, but as we have no appliances here for so large a publication I must cut my coat according to the cloth, and introduce only the most general views. The use of this seems to me to enable us more thoroughly to investigate the nature of air and water in all its parts: for if the true shape of the particles is once discovered, we obtain with it all the properties which belong to such a shape.» [1]

Swedenborg here opposes the Cartesian theory with regard to the *shape* of the particles, and incidentally indicates how faithfully Harald Wallerius and his son Johan adhered to the Cartesian philosophy. But that Swedenborg had by no means become an opponent of the »Cartesian» theory of vortices is evident not only from the numerous references to vortical theories with which his later »Principia» abounds, but also from his three little works on the »Earth and Planets». [269–320] Swedenborg's conception of the earth's revolution around the sun in the planetary vortex is further shown by the following quotation from his letter to Eric Benzelius, Jr., dated November 3rd, 1719:[2]

»Most honored and dear brother.

»A few days ago I arrived here in Stockholm, when I was at once informed by various persons that a new discovery had been made in France affecting the inhabitants of this earth, viz. that our earth had approached about 35,000 miles nearer the sun, and that they had written on this subject to the learned Academies. I should like very much, for better information, to obtain more particular knowledge respecting it, viz. whether observations have been made of the sun's diameter, and its visible increase, or of the parallaxes of the planets and their supposed

[1] See the original Swedish letter in Vol. I., p. 281, of this series. The version above is a revised form of the English translation in Vol. I., pp. 296—297 of the »Documents concerning Swedenborg», edited by the Dr. R. L. Tafel, London, 1875—1877.

[2] The original Swedish letter from which we have quoted is printed in Vol. I., p. 290, of this series. The translation below is revised from Dr. R. L. Tafel's »Documents», Vol. I., pp. 307—309.

displacement, which would be noticed, in case we approached nearer to our centre; for this could only show itself within our solar vortex, outside of which there is no possibility of any indications nor of any parallax with the sun showing itself, unless one should appear which could not be distinguished before. The greatest matter of surprise is, that such a leap should have been made within one or two years, when yet no comet has hurled itself into our larger vortex, nor has any other planet, so far as I know, approached so near to our terrestrial vortex, that it could have forced us inwards. In case there have been some such violent cause, we may presume that our planet will again recede to its proper distance, inasmuch as this always adapts itself to the speed and to the right track. It does not seem reasonable that this should have taken place in a natural manner in so short a time, unless it is deduced from observations made for some 100 years. I am glad, however, that I treated publicly a similar subject about a year ago in my treatise »On the Earth's Motion and Rest», in which I maintain that the earth moves more and more slowly both in its annual and diurnal revolution, from which it must necessarily follow, that it approaches nearer and nearer to our sun; for the more rapid the motion and revolution of the planets within the solar vortex, the greater is the distance to which they are carried from the centre; but the slower the motion, the more they are drawn inwards; moreover, it is known in what proportion the centrifugal force increases according to the velocity with which a body either tends outwards or inwards. Isaac Newton's »Principia» treats of this subject. The case with the planets is, also, as if a long arm were made, with a ball upon it, which was free, and could slide either forward or backward on the arm, and thus could move either out or in by the least force; if, now, this ball should be spun round very rapidly — especially under water — then the centrifugal force would be increased to such a degree, that the ball would run far out on the arm, away from its centre; but if the motion (*primum mobile*) should decrease, the ball would be drawn inward. Exactly so it is with the planets; if the first moving cause (*primum mobile*) decreases, the planet approaches nearer to its centre; but if the motion is increased, the planet is thrown far out; or what is the same thing, the slower the revolution the nearer its approach to the sun, which is the theory I discuss in the above-named treatise, which I shall show you when there is a good opportunity. That this, however, should take place within two or

three years, I cannot yet get into my head; although even our atmosphere itself seems to indicate a change in the temperature in respect to summer and winter, and also in respect to the unusual north winds we now have. With regard to the nature of motions, if an examination is made of the degree in which they either increase or decrease, they are no doubt in duplicate ratio, and it appears that toward the end motion decreases more in one moment than before in 20; for instance, if anything be whirled around, the revolution towards the end diminishes more in one moment, than it did before in 20; yet this cannot, it would seem, be applied to our planet. I should therefore like very much to obtain more exact knowledge about this matter.»

We see from the above, and from many other places in Swedenborg's early works and letters, that although a student of Newton's »Principia», and a great admirer of his discoveries, Swedenborg did not go further and also accept Newton's doctrine of the vacuum. In agreement with the older Cartesian philosophy, Swedenborg found vortices of atmospheric particles necessary, and all his later explanations of the planetary and lunar motions involve the vortical theory.

In still another direction Swedenborg is in agreement with Descartes rather than with Newton. We refer to the general conceptions of the origin, composition and interrelations of substantial and material particles. While Descartes derives his series of particles from the Infinite, and Newton also holds that God in the beginning created small, impenetrable particles, by whose composition everything was formed, they differ in that Descartes accepts no creation of particles in a vacuum, while for Newton the vacuum is a postulate, even if he later on began to speculate as to the necessity of a communicating ether. In his *Principia Philosophiae* Descartes expressly opposes the idea of a vacuum, but Newton was possibly led to construct his impossible corpuscular theory of light and colors just because he did accept a vacuum in his earlier work the *Principia*, 1686, the *Opticks* not appearing until many years later, in 1704.

Since the fundamental differences between those philosophies which accept the principle of discrete spatial substances without postulating a vacuum, and those which suppose that atoms occupying space are contained and move in an infinite vacuum of which space is also predicated, are very well illustrated by the various theories of light and color, it will throw further light on Swedenborg's relation to Descartes and New-

TON briefly to recount the history of investigations concerning light and color up to SWEDENBORG'S times.

GOETHE has well said:[1] »From time immemorial it has been dangerous to treat of color, so much so, that one of our predecessors ventured on a certain occasion to say, 'The ox becomes furious if a red cloth is shown to him; but the philosopher, who speaks of color only in a general way, begins to rave.'». Since ancient times the phenomena of light and colors have received the attention of philosophers, and many are the theories of their causes which have been presented. PYTHAGORAS taught that vision was caused by particles continually projected from the surfaces of objects into the eye, while EMPEDOCLES and PLATO ascribed the excitation of the sense of sight both to emanations proceeding from the objects seen and also from the eye itself. ARISTOTLE opposed the doctrine of visual rays and emission theories in general, maintaining that light is not a material emission in any sense, but an action of a pellucid medium, thus anticipating in a general way some of the best results of modern times. EPICURUS, LUCRETIUS, and others had a confused notion that the eye sees bodies at a distance in a similar way that we feel them by means of a rod, and this strange idea was accepted for many centuries until the Arabian astronomer ALHAZEN showed in the eleventh century A. D. that the cause of vision proceeds from the objects and not from the eye.

The ancients were acquainted with some of the fundamental laws of optics, among which may be mentioned these: that light travels in straight lines, that the angle of incidence is equal to the angle of reflection, that water and air refract light, and that transparent balls of glass or crystal, or glass globes filled with water, may be used as burning glasses.

ALHAZEN made great progress in the explanation of reflection and refraction, and also entered into anatomical examination of the eye. VITELLIO, a native of Poland, still further extended the knowledge of refraction and reflection, drawing up some improved tables concerning them. That universal genius, ROGER BACON, if we are to accept certain statements in his works as authentic, appears to have discovered the underlying principles of both the telescope and microscope, and to him also has been

[1] »*Zur Farbenlehre*», 2 vols., Tübingen, 1810. There is a later edition and a translation of the first volume by CHARLES LOCK EASTLAKE R. A., F. R. S., London, 1840, entitled »Goethe's Theory of Colors.»

attributed the invention of the magic lantern. The first telescope, however, was, according to one version of the story, constructed by a Dutchman named JANSEN, whose children while playing in their father's workshop accidentally placed a convex and concave spectacle glass at a short distance from each other and noticed the apparent increase in magnitude of what they saw through the glasses. They drew their father's attention to the phenomenon, and he fixed such glasses in a tube and sold the instrument. It is certain that the principle of the telescope was discovered in Holland, although it is not quite clear who the discoverer was. But whoever he was, GALILEO, having heard of the instrument, made one himself, and with it discovered a satellite of Jupiter. Great progress was now made in the study of light and colors. KEPLER, PORTA, DE DOMINIS, SNELLIUS, DESCARTES, and GRIMALDI both enlarged the field of discovery and corrected previous results, preparing the way for NEWTON, who in 1704 published his »Opticks», containing experiments of the utmost importance and presenting his theory of light and colors, which, although rejected as to its corpuscular philosophy, is still accepted by the scientific world in many other respects.[1]

NEWTON's theory briefly stated is as follows: Lights consists of material particles or luminous corpuscles sent forth from a luminous body in straight lines which by their mechanical action on the retina produce sight. He says:[2]

»Are not the Rays of Light very Small Bodies emitted from Shining Substances? For such Bodies will pass through uniform Mediums in right Lines without bending into the Shadow, which is the nature of the Rays of Light. They will also be capable of Several Properties and be able to conserve their Properties in passing through several Mediums, which is another Condition of the Rays of Light.»

NEWTON also attributes the heat of substances to the agitation of their parts caused by the action of the rays.

NEWTON's theory of light, according to the above quotation, is therefore an »emission» or »corpuscular» theory, its fundamental features being similar to those combated ages before by ARISTOTLE. NEWTON was well aware of the »undulatory» theory, which considers light to be due

[1] For a condensed history of theory and experiment on light and color see PRESTON's »Theory of Light,» Macmillan & Co., 1890, of which the present account is for the most part an abridgement. For original documents see GOETHE, *Op. Cit.*, Vol. II.

[2] »Opticks», Bk. III., Qu. 29.

to the periodic motion of a medium between the luminous source and the retina, but he thought that a ray of light could travel only longitudinally in a manner analogous to sound vibrations, and therefore, as PRESTON says, he »fell back upon the emission theory, and developed it with a genius more than mortal.»[1]

NEWTON'S theory of color may be stated as follows: Every color is simply a kind of light. Thus when a ray of white light from the sun is passed through a prism, the various kinds of light composing the ray are separated from each other, and when one of these kinds of light is again passed through a prism it remains unaltered as to color. He thus taught that there were seven fundamental lights: violet, indigo, blue, green, yellow, orange, red, the combination of which produced white light, and he considered this proved by collecting all the refractions of his spectrum by means of a lens and again producing white light. NEWTON not only thought that sunlight was composed of several different kinds of light, but in the first sentence of his »Opticks» emphasizes his opposition to all such conceptions as those held by SWEDENBORG and other receivers of vibratory and undulatory theories in the following language:

»The Phenomena of Colours in refracted or reflected Light are not caused by new Modifications of the Light variously impressed, according to the various Terminations of the Light and Shadow.»[2]

NEWTON'S corpuscular theory of light was opposed by ROBERT HOOKE, and even long before, DESCARTES, LIONARDO DA VINCI, GALILEO and GRIMALDI had written in favor of the idea that light is an instantaneous pressure of an elastic medium or a vibratile movement there of. Butthe undulatory theory was first definitely stated by HUYGHENS in 1678, and after remaining lifeless for almost a century, was revived by YOUNG, the discoverer of the principle of interference. It was still further strengthened by FRESNEL, who introduced the idea of transverse vibrations guessed at by HOOKE in 1672. The undulatory theory teaches that the propagation of light is due to the periodic wave motion of a postulated medium called the ether, that there are millions of kinds of waves differing in length, that only a short range of these may be perceived in the spectrum from violet to red, and that above the violet are many waves decreasing in length and noticeable in fluorescence and chemical

[1] *Op. Cit.*, p. 21.

[2] Book I, Prop. I, Theor. I.

action, while below the red are many waves increasing in length and noticeable in thermal action or calorescence.

It should be noted that NEWTON also postulated an ether in which his luminous corpuscles travelled, and in which they were capable of exciting undulations.

»He also attempted to account for gravitation in an ether, but he published little of this theory, because he was not able from experiment and observation to give a satisfactory account of the medium and the manner of its operation in producing the chief phenomena of nature.»[1]

SWEDENBORG'S theories of light and colors are radically different from those of NEWTON. The whole scheme of his bullular hypothesis would at once prevent the formation of any theory involving the shooting of corpuscles from the sun to the earth and thus impinging on the retina, for he considers all space to the filled with degrees of matter and natural substances, differing in degree of density of composition and inertia. From the very beginning he taught that light is produced by the undulatory motion of an elastic ether, and that colors are produced by the modification of this motion in the material objects receiving it. He developed and modified the theory from time to time, but that it was originally derived from the older workers, from DESCARTES, HUYGHENS or HOOKE, is clear from SWEDENBORG'S earliest works.

Up to the present point we have seen that SWEDENBORG retained the Cartesian theory of vortices and without accepting the Newtonian vacuum nevertheless employed NEWTON'S discovery of the mathematical relation of masses in space which is commonly called the law of gravitation. With regard to the question of the constitution of matter, GASSENDI and BOYLE had introduced the atomic theory of DEMOCRITUS, who also postulates a vacuum, into modern chemistry and physics, but SWEDENBORG, who studied BOYLE'S works, and was in general much influenced by the English experimental school of thought, nevertheless differs with all those advocates of the subdivisibility of matter whose reasoning ends

[1] Preston, *Op. Cit.*, p. 26: — The student of SWEDENBORG'S cosmology may be interested in the following note, quoted from the same work, pp. 25—26: »To Descartes the bare existence of bodies apparently at a distance was proof of the existence of a continuous medium between them, for he regarded extension as the sole essential property of matter, and matter a necessary condition of extension. 'Ethers were invented for the planets to swim in, to constitute the electric atmospheres and magnetic effluvia, to convey sensations from one part of our body to another, till all space was filled several times over with ethers' (J. C. Maxwell).«

in ultimate atoms which, while occupying space, cannot be further divided, but move in a vacuum. SWEDENBORG, while differing from DESCARTES as to the shapes and properties of his particles, still agrees with that philosopher in accepting a series of discrete substantial forms whose origin is the Infinite, and which move, not in a vacuum, that is, a great empty space, but whose relationship to one another first produces space. He would therefore maintain that space is not a vacuum in which the particles move, but that it is a relationship of the extended particles. Every student of the history of philosophy and the sciences is aware of what confusion and obscurity have prevailed concerning these prime questions, and that even today both physicists and metaphysicians accept theories which are in utter disagreement with each other. We cannot, however, here enter upon a detailed discussion of these profound questions, but must content ourselves with having defined SWEDENBORG'S position and its relation to DESCARTES and NEWTON.

If, now, we enquire as to how SWEDENBORG placed himself with regard to the problems of the divisibility of matter and its properties, and endeavor to see his exact position in history, we find that his earliest statements date from a period when he was intimately associated with the Swedish ARCHIMEDES, CHRISTOPHER POLHEM, and that whether POLHEM was or was not the author of the chemical and physical theories which will now be referred to, SWEDENBORG in any case developed his own theories upon a basis which was supplied by POLHEM. The evidence for this is the following.

POLHEM, whose mechanical genius and numerous inventions won the admiration of his age, has left behind him masses of unpublished matter, preserved in the Royal Library at Stockholm, among which there are many dialogues and discussions which set forth his conceptions of mechanics, physics, chemistry and dietetics. Among these manuscripts is a »Dialogue between Mechanica and Chymia on the Constitution of Nature»,[243] which is in the handwriting of SWEDENBORG, but in the same package the latter portion of the »Dialogue» exists as a first draft in the handwriting of POLHEM. We know that SWEDENBORG for a time acted as POLHEM'S amanuensis, and he appears to have done so in the present instance. The remarkable thing is that several of the positions of the »Dialogue» which have by students of SWEDENBORG been considered to be original with him in his »Precursor» and »Miscellaneous Observations», are clearly stated in the little work we are discussing.[243] Thus we observe that the »Dialogue» mentions the salt particles smaller

than the water particles, which salt particles are formed at the bottom of the sea by pressure. There is also a remarkable similarity between the positions of this work with regard to the flood, the origin of the mountains, strata, sand and clay, and the statements of SWEDENBORG on the same subjects. We observe further that BOYLE and the Swedish chemist HJÄRNE are mentioned. SWEDENBORG was personally acquainted with HJÄRNE and probably derived several ideas from him. As for the authorship of the »Dialogue», there can be no doubt that POLHEM drafted the work, but it may be that SWEDENBORG collaborated.

Still another question of a similar kind arises when we notice the resemblance of many expressions in the »Dialogue» to those in the little paper in SWEDENBORG's handwriting »On the Causes of Things».[229] Both of these papers refer to the floating of a hollow bullet on water and to the part which flowing glass played in the original development of the earth, an idea probably derived from the presence of quartz and other glassy looking minerals occuring in the crust of the earth. The paper »On the Causes of Things» has always been ascribed to SWEDENBORG, and various students have with the learned editor of the »Documents concerning Swedenborg» seen how in this early manucript »are contained the germs of some theories which SWEDENBORG subsequently treated more fully and established at greater length».[1] If, however, we examine the manuscripts of POLHEM we find a little work »De Causis Rerum», which has contents similar to those contained in the paper written by SWEDENBORG's hand. POLHEM's paper is much longer than SWEDENBORG's, but contains the same headings and treats of the same subjects. The discovery of this evidence shows that if we are ever to obtain clear and satisfactory ideas concerning the sources and development of SWEDENBORG's philosophy of nature, and we may add of the Swedish natural science and philosophy of the eighteenth century, a much deeper investigation and historical analysis than has been attempted in the past must be undertaken. The literature is very meagre, and students must therefore, in discussing the development of SWEDENBORG's early philosophy of nature and »Principia», rely very largely upon the internal evidence of his own works and letters, although fully admitting the probability that the publication of the extensive material left behind by the Swedish scientists of the seventeenth and eighteenth centuries which still lies buried in the public and private archives of Sweden would throw a powerful light upon the subject.

[1] Dr. R. L. TAFEL's »Documents», Vol. II., p. 890.

NOTES

ON THE

DEVELOPMENT AND TEXTS OF SWEDENBORG'S EARLY PHILOSOPHY OF NATURE AND »PRINCIPIA».

Since the publication of Vols. I. and II. of SWEDENBORG's scientific texts the literature has been greatly enriched by a number of festival publications issued at Stockholm and Upsala during the past year, and also by the contributions published in the *Transactions* of the International Swedenborg Congress held in London, July, 1910. The festival publications which bear upon SWEDENBORG's scientific works will be referred to in the *Notes* below, in which the reader will find a résumé of the latest results obtained in Sweden on the development and texts of SWEDENBORG's early philosophy of nature and »Principia».

Stockholm, March, 1911.

EDITOR.

An interval of three years has elapsed since the publication of Vol. II., and as considerable progress has since been made in the interpretation of SWEDENBORG's physical philosophy it seems advisable that the »Notes on the history and texts of SWEDENBORG's contributions to cosmology», published in 1908 (Vol. II., pp. 369—373), should here be revised and amplified.

In our former *Notes* the Cartesian Controversy, which played so important a rôle at Upsala University during the latter half of the seventeenth century, was referred to only in passing, but in the Introduction to

the present volume the reader will find some account of that important revolution in the intellectual life of Sweden. Viewed in connection with the historical background furnished by the Cartesian Controversy and its influence upon SWEDENBORG's teachers and early associates, his earliest scientific and philosophical contributions fall into relationships which permit our obtaining that perspective which is so necessary for a just view of their significance. The streams of doctrine and speculation arising from the works of ARISTOTLE, DESCARTES and NEWTON, to mention only the main sources, were all active at Upsala just before and after SWEDENBORG's residence at the University (1699—1709), and could not fail to influence the course of a young investigator's thoughts. In the Introduction we have attempted, even at this early stage of these historical researches, briefly to define the conditions by which SWEDENBORG was surrounded, when in early manhood he decided to devote himself to the study of nature.

After preliminary theological, classical, and scientific studies at Upsala University, SWEDENBORG defended a classical disputation in 1709. About a year later he departed for London, and, according to his earliest letters, the journey had been determined upon before his leaving the University. Bishop JESPER SWEDBERG, SWEDENBORG's father, and ERIC BENZELIUS, Jr., his brother-in-law, had visited England and been greatly influenced by English learning. Before leaving the paternal roof in 1710, SWEDENBORG sent to Upsala from Skara the skeleton of what he at the time referred to as a »giant». Subsequently the bones were found by Professor LARS ROBERG to be those of an extinct species of whale. Although surrounded by the rich geological treasures of Vestrogothia, SWEDENBORG does not appear at this early stage of his work to have perceived the significance of the stories buried in the rocks. Probably he was so confined to the neighborhood of the episcopal residence, Brunsbo, that the wonders of Kinnekulle, about which he published an important work ten years later, were beyond his reach, although but a few miles distant. That he chafed in his confinement at Brunsbo and longed to set forth upon his journey to England appears from his first letters to BENZELIUS. (Vol. I., p. 201 *et seqq.*)

Arrived in England, SWEDENBORG devoted his attention chiefly to astronomical subjects, studied NEWTON, and laid the foundations for his future many-sided activities in the field of the natural sciences, as may be seen from his letters to BENZELIUS. On the way back to Sweden, during a stay at Greifswald in Swedish Pomerania, SWEDENBORG began to arrange his results into order and published a number of poems and fables, as also

a »Festive Applause» on the return of Charles XII. from Turkey. In the opening words of the »Applause» he refers to a doctrine of the Pythagoreans that all things proceed and return in cycles, making it a leading idea in the little work, a harbinger of doctrines which were in later works again and again elaborated by SWEDENBORG, forming as important a component of his later philosophy as the doctrine of perpetual flux in HERACLITUS. Just before returning to his native country SWEDENBORG sent to BENZELIUS a letter (Vol. I., p. 225) in which he furnishes a list of the inventions then in hand. From the letter referred to it may be seen how his mind at that time teemed with ideas which were in part elaborated and printed in the *Daedalus Hyperboreus*[1] and which in several respects foreshadowed the subsequent course of discovery.

Without attempting to analyze SWEDENBORG's numerous papers of this period, dealing with very diverse mechanical, physical, chemical, mathematical, geological and metallurgical questions, let us turn our attention to his earliest contributions to a philosophy of nature, subsequently developed in his »Principia». In our former *Notes* special emphasis was laid upon the fact that SWEDENBORG in reality wrote three »Principia», and that the second work was evidently not from the period *prior* to the *Prodromus Principiorum Rerum Naturalium*, but of much later date. The second »*Principia*» probably dates from about 1729, thus only five years before the publication (in 1734) of the third »*Principia*». We shall return to this question below, and merely refer to it here in order to again draw

[1] The *Daedalus Hyperboreus* has been reproduced in a photolithographic *facsimile* which will be included in Vol. IV. of the present series, and a separate edition of the reproduction has already appeared in »*Kungliga Vetenskaps Societetens i Upsala Tvåhundraårsminne, Upsala,* 1910, edited by the Society's perpetual secretary, Professor Dr. NILS DUNÉR, and containing much historical information of interest to students of SWEDENBORG'S earliest scientific works. This »Tvåhundraårsminne», published on November 19th, 1910, in celebration of the bicentenary of the Royal Society of Sciences of Upsala, forms one of the twelve festival publications which appeared at Stockholm and Upsala in July and November, 1910. Without here referring to the whole series of festival publications, several of which are editions of SWEDENBORG'S early works, and all of which will be noted in the »Chronological List» to be included in the *Appendix* to Vol. I. of this series, we desire to call the special attention of the student of SWEDENBORG'S scientific works to the festival publication dedicated by the University of Upsala *Till Kungl. Vetenskapssocieteten i Upsala 1910,* in which is contained a remarkably thorough discussion of »EMANUEL SWEDENBORG'S investigations in natural science and the basis for his statements concerning the functions of the brain,» by MARTIN RAMSTRÖM, M. D., Professor of Anatomy at the University of Upsala.

attention to the *very gradual development of Swedenborg's principles of nature from 1721 to 1734*, a longer period by two years than that in which he produced (from 1734 to 1745) his great works on the human body and mind, in the analysis of which the principles previously developed were constantly applied. Now, an interesting result of recent investigations in Sweden is that *even before 1721 the »Principia» were expressed in some of their most striking aspects in a number of short Swedish works dating from about the year 1718.*[269–320] In these Swedish works, several of which are printed in the present volume, we therefore find the original conceptions which were later expanded in the three Latin »Principia».

In the Introduction we have discussed the relation of SWEDENBORG's philosophy of nature to the philosophies of DESCARTES, NEWTON, and POLHEM, and pointed out that the manuscripts »*De Causis Rerum*»[229] and »*Discours emellan Mechaniquen och Chymien om naturens wäsende*»,[243] although in SWEDENBORG's handwriting, were probably more the result of POLHEM's authorship than SWEDENBORG's. The relationship of these texts, now first published, is, however, confined for the most part to SWEDENBORG's chemical, geological and physical theories as recorded in the treatise *Om Watnens Högd* and in the *Prodromus* and *Miscellanea observata*. When we come to the cosmological theories of SWEDENBORG, the historical lines lead us partly to the ancient classical writers of Greece and Rome, partly to DESCARTES and NEWTON, as pointed out in the Introduction. Whether SWEDENBORG received the first hints of his »nebular hypothesis» from OVID's *Metamorphoses*, or from some other source than his own original speculations, has not yet been made clear. Certain it is that he did not express the theory in the fragment *En ny theorie om jordens afstannande*,[269] although it may have been in his mind then, for in discussing the decreasing motion of the earth and planets (a theory developed in our times by G. H. DARWIN), the question of the original planetary and solar chaos of course lay near at hand. Be that as it may, in a work of considerably later date, to judge from the pronounced difference in the handwriting, the theory of the origin of the earth and planets from their »first lump» is clearly expressed in the opening words of the preface.[285]

In the printed work,[299] which, after some revision and expansion, was published at Skara in 1718, the »lump» has become a »Chaos», reminding us of the chapter in the *Principia* of 1734 *De Chao universali solis et planetarum*. In this theory SWEDENBORG separates himself from the cosmological theories existing before his time and establishes the »nebular hypothesis»,

thereby anticipating BUFFON, KANT, WRIGHT, LAPLACE and other writers. In so far as the doctrine of vortices is concerned, SWEDENBORG probably derived it from DESCARTES, but he differs with DESCARTES as to the origin of the planets, for whereas DESCARTES derives them from outer space, SWEDENBORG derives them from the original chaos of the sun and planets. So far as BUFFON is concerned, he had SWEDENBORG's work in his library two years after it was published, and did not publish his own theory of the origin of the planets by the crashing of an enormous meteor into the sun, the matter of the planets being thus splashed out into space, until many years later. Of this theory it must be admitted that it crudely resembles SWEDENBORG's in so far as the solar origin of the planets is concerned, and it also reminds us of the theories of certain modern writers who hold that masses in space may crash into one another and produce nebulae. As for the theories of KANT and LAPLACE, and their relation to SWEDENBORG's »Principia» theory, we may here quote the remarks of NYRÉN, who wrote on the question many years ago.[1]

»It cannot be denied that the essential part of the nebular hypothesis, namely, that the whole solar system has been formed out of a single chaotic mass, which first rolled itself together into a colossal ball and subsequently by rotation separated a ring from itself, which then during the continued rotation broke up into several parts, and finally contracted into the planetary masses, was first expressed by SWEDENBORG. The work of KANT here in question, *Allgemeine Naturgeschichte und Theorie des Himmels*, was published in 1755, that is 21 years later; LAPLACE did not publish his hypothesis until 62 years later. It should further be observed that SWEDENBORG has in all probability given his hypothesis the more correct form, that, namely, as LAPLACE also later on supposed, the planets were formed out of broken up rings, (on the basis of the vortical theory SWEDENBORG found but one ring necessary) not, as KANT supposed, immediately out of conglomerations formed from the original mass of vapor.»

If we examine SWEDENBORG's earliest works in their chronological order we find that the three component parts of his early philosophy of nature, namely, 1) the theory of vortices, 2) the origin of the earth and planets, and 3) the constitution of matter out of grades of particles, — that these

[1] *Vierteljahrschrift der Astronomischen Gesellschaft*, Vol. 14, 1879. See recent discussions in the Introduction to Vol. II. of the present series, Stockholm, 1908, by Professor Dr. S. ARRHENIUS, and in the *Transactions* of the International Swedenborg Congress, London, 1910, by Professor I. TANSLEY.

three streams of thought, which we have briefly discussed in the Introduction, follow one another during the second decade of the seventeenth century. It will be observed that their order indicates how SWEDENBORG passed from more general to more specific questions, from the universe to the particles of which it is composed, and, probably under the guidance of that ancient doctrine that in the microcosm we see the macrocosm, and *vice versa*, he was led to formulate his early philosophy in such a way as to accept the same laws as governing the least parts of nature which are operative in the grand universe. SWEDENBORG, so far as his works record, accepted the theory of vortices without question, but applied it successively in two new ways, 1) to the origin and motions of the planets, and 2) to the origin and motions of the grades of »particles» in nature. The first application is recorded in the three little Swedish works on the earth and planets published in this volume, and in the three Latin »Principia». The second application is first found in the »bullular hypothesis» of the *Prodromus* and *Miscellanea observata*, and later, in greatly extended form, in the second and third *Principia* and in other works written after 1730. Prior to 1721 we find very little concerning »particles», but something of the future »bullular hypothesis» may be discerned in the *De Causis Rerum*,[229] in *Om eldens och fergornas natur*,[235] in the *Discours*,[243] and in SWEDENBORG'S early letters, while in the *Philosophia corpuscularis in compendio*,[265] dating from a period long after the *Principia*, the corpuscular philosophy is once more briefly summarized. As for the doctrine of the mathematical or natural points, which plays so prominent a rôle in the second and third »Principia», it is barely referred to in the earlier works, although it is defended and its future treatment promised in the *Miscellanea observata*.

A feature of SWEDENBORG'S early works on the »Earth and Planets» which will no doubt impress itself upon the reader's mind, is the constant reference to the biblical statements concerning creation. That SWEDENBORG at that time, 1717—1718, followed the literal account in *Genesis* is indisputable, and he attempts all kinds of explanations and reconciliations of the account of creation in *Genesis* and of the ages of the patriarchs, etc., with the natural science of his time. This he also continued to do in the two editions of »*Om watnens högd*», published in 1719, in which he still accepts NOAH'S flood literally. But if we compare the works of this period with one another, and with the later Latin works, we find that SWEDENBORG refers less and less to the biblical accounts, and in the beginning of the second *Principia* the absence of reference to the *Genesis* account is very striking. He evidently became

less and less literal as he abstracted his philosophy from its first matrix, although remaining a devout believer in the Deity (*Numen*), identical with the Infinite of the *Principia*. In his later theological works the accounts in *Genesis* are continually referred to as being not literally, but spiritually, true. In his Latin *Principia* SWEDENBORG had already so far separated himself from the Lutheran theology that his *De Infinito*, 1734, was criticized as being materialistic, which it certainly is not; and that there must have been a very considerable freedom in Sweden with regard to such questions would seem to be indicated by the fact that the *De Infinito* was dedicated to ERIC BENZELIUS, who had become Bishop of Linköping and who later became Archbishop of the Swedish Church. The Roman Church was, however, less complacent and honored the *Principia* of 1734 by placing in on the *Index Expurgatorius*.

The Texts and Translations.

The texts of the *Prodromus* and other short treatises[1–227] were published at Amsterdam in 1721, and the *Index*[140] shows that they were all in hand and possibly in the press at the same time. No trace has ever been found of the *Principia* referred to in the *Prodromus*, although it seems certain from the references that SWEDENBORG had actually committed it to writing, or at least drafted it. The *Principia* references of the *Prodromus* evidently have no connection with the second *Principia*, as some have supposed. (See R. L. TAFEL'S *Documents concerning Swedenborg*, London, 1875—1877, Vol. II., p. 899). In a monumental work published in 1906 by the late Rev. JAMES HYDE, *A Bibliography of the Works of Emanuel Swedenborg* London, 1906, the second *Principia* is still dated 1720 (p. 32). But immediately after the publication of *An Abridged Chronological List of the Works of Emanuel Swedenborg*, Stockholm, 1910, I had an opportunity of thoroughly discussing this question with Mr. HYDE, when we agreed that the true date is much later, probably about 1729. The evidence for this is contained in SWEDENBORG'S letter to ANDERS CELSIUS, the secretary of the Royal Society of Sciences of Upsala, (Vol. I., p. 321).

SWEDENBORG'S reference to »*ex priori et posteriori principia Naturae*» reminds one strongly of the title of the second *Principia*, and the reference to magnetism indicates that the questions treated of in Part II. and other portions of the »Principia» of 1734 were in the author's mind as early as 1729.

Several of the short Latin treatises published simultaneously with the *Prodromus* had previously appeared in Sweden in the Swedish language, and were in their Latin dress reproductions and extensions of the Swedish originals. (See the *Chronological List*, Stockholm, 1910, which will appear in extended form in the *Appendix* to Vol. I. of this series and will contain not only references to all printed editions of Swedenborgs texts, but also to the numerous *facsimile* reproductions of MSS. published at Stockholm, 1869—70, and subsequently.)

The manuscript of *De Causis Rerum* is preserved in the »Benzelius Collection» of the Linköping Diocesan Library, Codex 14 A, No. 30, and in the same volume No. 43 is preserved the manuscript of *Om eldens och fergornas natur.*

The manuscript of the *Discours emellan Mechaniquen och Chymien om naturens wäsende* is preserved in the Royal Library, Stockholm, among the manuscripts of Polhem, where it was found by the editor in 1903.

The manuscript of *Philosophia corpuscularis in compendio* is contained in Swedenborg's MS., Codex 57, preserved in the Library of the Royal Swedish Academy of Sciences, Stockholm.

The manuscript of *En ny theorie om jordens afstannande* is preserved in the »Benzelius Collection» of the Linköping Diocesan Library, Codex 14 A, No. 34.

The manuscript of *En ny mening om jordens och planeternas Gång och Ständ eller några Bewis at jorden löper alt sachtare och sachtare: at winter och sommar, dagar och dygn til tiden blifwa lengre och lengre in til werldsens sista tid,* is in the possession of Jarl Ernberg, Esq., Stockholm, and has been in his family for many years, having originally come into its possession through Secretary Von Kocken, an official of the time of Charles XII.

The little Swedish work *J. N. D: Om jordenes och planeternas Gång och Ständ: thet är några Bewisliga skiäl at Jorden aftager i sitt lopp och nu går långsammare än tillförene: giörande winter och sommar, dagar och nätter lengre i anseende till tiden nu än förr,* appeared at Skara in 1718 and is evidently the final form in which Swedenborg produced his work on the »Earth and Planets», the two manuscript preparations for which are printed on pages 269—298.

In conclusion, the attention of the reader is especially directed to the *Appendix* to Vol. I. of this series in which the revised *Chronological List of Swedenborg's Works* is to appear, together with other information respecting the manuscripts and printed works of Swedenborg. In the final volume of the series the *Notae Criticae* for the texts and other critical matter will appear, together with an Index.

1119 ϕ

119262

BX
8709
S7
v.1

119262

Swedenborg Archives

DATE DUE	BORROWER'S NAME

Swedenborg Archives v.1

THEOLOGY LIBRARY
SCHOOL OF THEOLOGY AT CLAREMONT
CLAREMONT, CALIFORNIA

PRINTED IN U.S.A.